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AQA A-level

Psychology

Jean-Marc Lawton
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AQA
A-level

Psychology

Jean-Marc Lawton
Eleanor Willard

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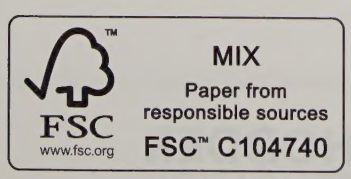

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The final three option chapters, as well as the answers to all assessment check, research in focus and strengthen your learning questions, can be found online here: www.hoddereducation.co.uk/aqa-alevel-psychology-options

Introduction

This book is aimed specifically at those students studying the AQA Psychology A-level specifications, though hopefully it will prove of interest and use to any student of psychology.

The book details the course content as outlined by the AQA specifications, but should also serve as a learning aid in itself and not just be a basic textbook. To create ease of use, there is a standard format throughout the book, with the features designed specifically to help you with your studies.

The book is divided into 17 chapters (three of which: Cognition and development, Eating behaviour, and Addiction, are only accessible online). These chapters contain the requirements for the A-level course. Within these chapters is the basic text that describes the relevant theories and explanation required by the specifications, alongside the following regular features, which require some further explanation in order for you to understand and get the most from them.

Features

Understanding the specification

Found at the beginning of each chapter, this feature details the specific elements of topics that need to be studied.

IN THE NEWS

Written in the style of a newspaper story, this feature highlights topical news items that illustrate central psychological themes of the topics being discussed.

KEY TERMS

Concise and clear explanations of significant words and words associated with each topic. Key terms are highlighted within the text in the first instance and then fully explained and detailed within the text itself.

Evaluation

This regular feature can be found after a research section and at the conclusion of explanations/theories and consists of general evaluative and analytical points.

RESEARCH IN FOCUS

Using examples from the text, this feature gets you to focus on methodological aspects of research studies (how studies are carried out) and asks relevant questions to assist learning and understanding. It will often be a good idea to reference material in Chapter 8 (Research methods) to get the most out of this feature.

YOU ARE THE RESEARCHER

This feature also focuses upon research methods, but this time from the viewpoint of the design of psychological studies. This will help to foster a greater understanding of why and how psychologists conduct research and help you to develop the necessary skills to plan your own research.

On the web

Take your learning and curiosity further by using this feature, which directs you to websites that provide a wealth of further information.

CLASSIC RESEARCH

As the title suggests, this feature focuses on famous psychological studies, taking you in some detail through the thinking behind such studies, as well as the aims, procedure, findings, conclusions and evaluation.

CONTEMPORARY RESEARCH

Similar in focus and presentation to the classic research feature, but this time featuring more recent cutting-edge research, providing an up-to-date account of the subject.

Increase your knowledge

A feature that provides extra learning material to form a useful and relevant source of elaboration for those who wish to take their learning a little further.

PSYCHOLOGY IN THE REAL WORLD

An occasional feature focusing upon practical applications of psychology that shows its usefulness within real-world settings and which will help to form a valuable source of AO3 evaluative material.

STRENGTHEN YOUR LEARNING

Found at the end of each element of a topic, this feature is designed to help you focus upon and appraise the material covered within the text. Acting as a form of comprehension exercise, the questions can be used as a means of revision before attempting the questions found at the end of each topic.

Assessment check

This feature consists of a variety of questions to help you with your studies.

SUMMARY

Each chapter concludes with a bullet-pointed review of the main points covered within the chapter.

Assessment checks

Examination skills

The AQA examinations assess three examination skills. These are Assessment Objective 1 [AO1], Assessment Objective 2 [AO2] and Assessment Objective 3 [AO3].

AO1 assesses level of knowledge and understanding by asking candidates to demonstrate knowledge and understanding of scientific ideas, processes, techniques and procedures, such as by outlining and describing relevant theories/explanations and research studies.

AO2 requires students to apply knowledge and understanding of scientific ideas, processes, techniques and procedures, such as by providing students with some stimulus material and then asking them to apply their psychological knowledge to that material.

AO3 requires students to analyse, interpret and evaluate scientific information, ideas and evidence, such as by assessing the worth and meaning of theories/explanations. For example, by a consideration of what research findings suggest, support/lack of support from other research sources, methodological criticisms, relevant ethical points, as well as practical applications and implications of research.

The assessment check feature presents questions. There are several types of such questions you can be faced with.

1 'Choice' questions require you to select from options provided to complete the answer, for example, see question 1 on page 232 in Chapter 5 Approaches in Psychology.
2 'Scenario' questions describe a situation based on a topic area. Knowledge of that topic area must then be applied to the scenario, for example, see question 3 on page 420 in Chapter 9 Relationships.
3 'Short answer' questions require specific answers, with elaboration (detail) needed to show fuller understanding, for example, see question 5 on page 420 in Chapter 9 Relationships.
4 'Methodology' questions are based upon research studies associated with topic areas. Knowledge of methodology must then be applied, for example, see question 2 on page 242 in Chapter 5 Approaches in Psychology. Some of these questions will require mathematical skills in order to be successfully answered, for example, see question 2 on page 406 in Chapter 9 Relationships.
5 Extended writing questions for the A-level qualification will never be worth more than 16 marks. These may be in the form of 'outline and evaluate', for instance of an explanation or theory, for example, see question 5 on page 449 in Chapter 10 Gender.

About the authors

Jean-Marc Lawton is an accomplished lecturer of Psychology and a renowned author of books on the subject. Aside from teaching he regularly contributes to revision conferences and the professional development of teachers. He lives in the north-west Scottish Highlands and has a keen interest in hill running and unlistenable music.

Eleanor Willard is a chartered teacher of Psychology and examiner who was a department head in a school in Yorkshire. She's now loving life as a PhD researcher and lecturer in Leeds and spends any spare time she has catching up with her daughters and taking in the beauty of her beloved Yorkshire with her husband.

1 Social psychology: social influences

Introduction

Social psychology studies how people's thoughts, feelings and behaviour are affected by the presence of others. Focus can either be upon how others affect an individual or upon group interactions. The social psychology topic looked at here is that of **social influence** – how individuals affect and are affected by others. Several areas of social influence are focused upon:

- Majority influence (types of conformity, explanations for conformity, variables affecting conformity and conformity to social roles)
- Obedience (explanations for obedience, situational variables affecting obedience and dispositional explanations for obedience)
- Explanations of resistance to social influence
- Minority influence
- The role of social influence processes in social change.

Understanding the specification

- *Internalisation, identification and compliance* are types of conformity students must have knowledge of; they are referred to directly in the specification.
- *Informational and normative social influences* are also referred to directly as *explanations of conformity* and so again must be studied.
- A knowledge of *conformity to social roles* is additionally required, including the *research of Zimbardo* into this area.
- Another area to be studied is that of *explanations for obedience*, including the *agentic state* and *legitimacy of authority. Situational variables affecting obedience* will also need to be studied, including *proximity, location and uniform.* There will be a requirement to have knowledge of the research of *Stanley Milgram* and others to achieve this. There is an additional requirement to study the *dispositional explanation of the authoritarian personality.*
- Students are required to be able to explain *resistance to social influence*, especially *social support* and *locus of control*, as they are referred to specifically.
- *Minority influence* is another required area of study, which must include focus upon consistency, commitment and flexibility.
- Finally, a knowledge of the *role of social influence processes in social change* is required.

These are the basic requirements of the specification. However, other relevant material is included to provide depth and detail to your understanding.

IN THE NEWS

Ψ The Psychological Enquirer

Pirates of independence

Figure 1.1 The Edelweiss Pirates (Jean Jülich, 1st left)

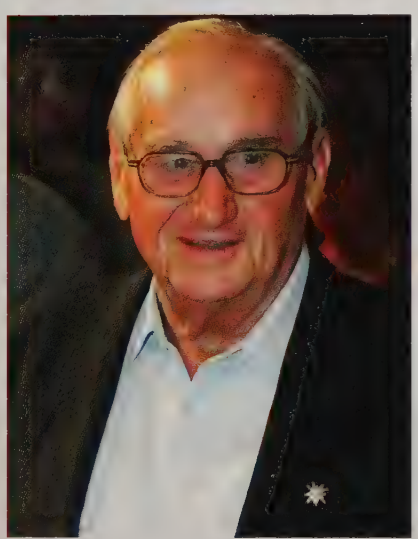


Figure 1.2 Jean Jülich as an older man

In November 2011 the press reported on Jean Jülich, who had died aged 82. He was one of the last surviving **Edelweiss Pirates** – working-class German teenagers who resisted the Nazis during the Second World War. Distinctive by their long hair, checked shirts, Edelweiss badges and their love of jazz music, by 1944 5,000 'Pirates' were living as outlaws in bombed-out cities throughout Germany.

Throughout the war Jean and his friends, both male and female, provided food and shelter to concentration camp escapees, fugitive Jews and German army deserters. They attacked Hitler Youth patrols, derailed ammunition trains, vandalised weapons factories and sabotaged machinery.

Jean was arrested at age 15, held in solitary confinement and tortured for four months. His 16-year-old friend, Barthel Schink, was hanged with 11 other Pirates, in public, without trial, on orders from Heinrich Himmler. Jean survived beatings, starvation and typhus in a concentration camp until he was freed by American troops in 1945.

One explanation at the time for the atrocities committed by the Nazis in the Second World War, such as the extermination of Jewish people and Gypsies, was that Germans had a 'personality defect' that led them to unquestioningly obey and commit such horrific acts. However, the bravery of Jean and the Edelweiss Pirates in opposing the Nazis shows this to be untrue, and that blind obedience wasn't the response of all Germans; indeed, there were groups of Pirates in most German cities. This goes against the dispositional explanation of obedience – that it was the internal characteristics of Germans which made them so obedient. Stanley Milgram's famous study suggested instead that it is situational factors – aspects of the environment – that lead to such behaviour. An element of normative social influence can also be seen in the hairstyle, clothing and music that the Pirates conformed to. The actions of the teenagers also highlight how social influence can be resisted. Indeed, it is heartening to realise that obedience with such destructive consequences can be resisted and that we are not doomed to commit immoral acts against our free will. However, the actions of the Pirates weren't appreciated. Due to their non-conformist nature, the conquering forces refused to recognise or reward their actions, and it wasn't until 2005 that their actions against the Nazis were no longer officially seen as criminal acts.

KEY TERM

Social influence – how the actions, thoughts and attitudes of an individual are affected by others

ON THE WEB

Want to know more about the Edelweiss Pirates and their resistance to the Nazis' attempts to control German society? Then go to:

www.raoulwallenberg.net/saviors/others/edelweiss-pirates-story/

1.1 Types of conformity

Conformity (majority influence)

'No man is an island, entire of itself, every man is a piece of the continent, a part of the main.'

John Dunne (1624)

'We are half ruined by conformity, but we would be wholly ruined without it.'

Charles Dudley Warner (1896)

Conformity is defined as yielding to group pressure. Conformity occurs when an individual's behaviour and/or beliefs are influenced by a larger group of people, which is why conformity is also known as **majority influence**. When conformity reduces a person's independence and leads to harmful outcomes, it can be a negative force. Generally though, conformity has positive outcomes, helping society to function smoothly and predictably. Much human activity is socially based, occurring in groups, so there is a need for individuals to agree in order for groups to form and operate efficiently. Conformity helps this process; by conforming we can make it easier to get along with each other.

Kelman (1958) made reference to three types of conformity, which vary in the amount to which they affect an individual's belief system.

1 **Compliance** – occurs when individuals adjust their behaviour and opinions to those of a group to be accepted or avoid disapproval. Compliance therefore occurs due to a desire to fit in and involves public, but not private, acceptance of a group's behaviour and attitudes. It is a fairly weak and temporary form of conformity, only shown in the presence of the group. For example, you may claim to support a certain football team, because many others of your age group do and you want to be accepted and not ridiculed by them. However, privately you may have little interest in this team, or indeed football at all.

2 **Identification** – occurs when individuals adjust their behaviour and opinions to those of a group, because membership of that group is desirable. This is a stronger type of conformity, involving private as well as public acceptance, but is generally temporary and is not maintained when individuals leave the group. For example, in the army you may adopt the behaviour and beliefs of fellow soldiers, but on leaving the army for civilian life, new behaviours and opinions will be adopted.

3 **Internalisation** – (also known as true conformity) occurs when individuals genuinely adjust their behaviour and opinions to those of a group. This involves individuals being exposed to the belief systems of others and having to decide what they truly believe in. If a group's beliefs are seen as correct, it will lead to public and private acceptance of the group's behaviour and opinions, which will not be dependent on the presence of the group or group membership for maintenance. For example, if you are influenced by a group's religious beliefs so that you truly convert to that faith, then your new religious way of life will continue without the presence or influence of the group. (Internalisation can also occur through minority influence, see page 41.)

KEY TERMS

Conformity – yielding to group pressure (also known as majority influence)

Compliance – publicly, but not privately, going along with majority influence to gain approval

Identification – public and private acceptance of majority influence in order to gain group acceptance

Internalisation – public and private acceptance of majority influence, through adoption of the majority group's belief system

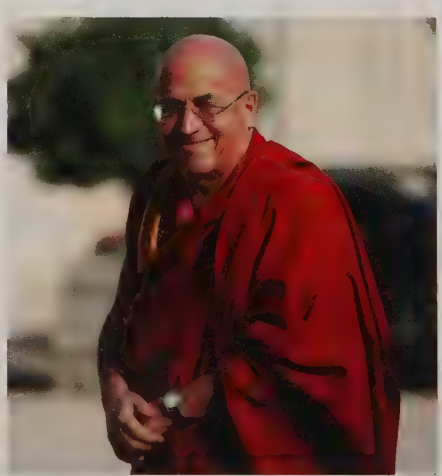


Figure 1.3 A religious conversion would be an example of internalisation

1.2 Explanations for conformity

Explanations for conformity are an identification of the reasons why people conform.

Deutsch and Gerard (1955) distinguished between **informational social influence (ISI)** and **normative social influence (NSI)**. This distinction, they believed, was crucial to understanding majority group influence.

Informational social influence (ISI)

Humans have a basic need to feel confident that their ideas and beliefs are correct (a need for certainty). This helps people feel in charge of their lives and in control of the world. This is the motivation underpinning ISI. When individuals are uncertain about something, they look at the behaviour and opinions of others and this helps shape their own thoughts and behaviour. This generally occurs in unfamiliar situations, like knowing which cutlery to use when in a restaurant for the first time, or in ambiguous situations where there is no clear correct answer, like watching a film and not knowing what to make of it. Watching others to see which cutlery they use, or asking what they thought of a film, helps a person make up their own mind. When people conform because of ISI, they tend to believe the opinions adopted. As they are uncertain what to believe, they look to the opinions of others and become converted to their viewpoint.

For example, Jenness (1932) (see Classic research, page 5) gave participants a task with no clear answer: estimating how many jellybeans were in a jar. He found that individual estimates moved towards the estimates of others, showing that they genuinely (privately) believed these estimates, demonstrating an example of *internalisation* (true conformity).

ISI can be seen to have an evolutionary basis to it, as looking to others for guidance in new situations that are potentially dangerous could have a survival value.

Abrams *et al.* (1990) think that we are only influenced by others' opinions in ambiguous situations when we see ourselves as sharing characteristics with them. Thus we are much more likely to internalise the opinions of friends than strangers and those we identify with (this is a similar effect to that of minority influence, where if a majority identifies with a minority, the minority will be more persuasive in converting the majority to its viewpoint – see page 41).

Normative social influence (NSI)

Individuals want others to like and respect them and not reject or ridicule them. This is the motivation underpinning NSI – the need to be accepted by others. The best way of gaining the acceptance of others is to agree with them. However, this does not necessarily mean that we truly agree with them.

Research

For example, Asch (1955) (see Classic research, page 6) got participants to conform to answers given by others that were obviously incorrect. If the participants gave the correct answers, they risked being ridiculed by the majority. A conflict had been created between an individual's opinion and

STRENGTHEN YOUR LEARNING

1. What is meant by conformity (majority influence)?
2. What type of conformity involves public, but not private, acceptance of a group's behaviour and attitudes?
3. What type of conformity involves an individual truly converting to the belief system of others?
4. Why does compliance occur?
5. What type of conformity is maintained without the presence or influence of majority influence?
6. What type of conformity occurs because membership of the group is seen as desirable?
7. Why is identification seen as a stronger form of conformity than compliance, but a weaker form than internalisation?
8. Give one real-life example of your own of:
   (i) compliance
   (ii) identification
   (iii) internalisation.

Figure 1.4 'Which to use?' We have a better idea when we examine the behaviour of others

KEY TERMS

Informational social influence (ISI) – a motivational force to look to others for guidance in order to be correct

Normative social influence (NSI) – a motivational force to be liked and accepted by a group

that of the group. In the post-experimental debriefing, many said 'I didn't want to look stupid' or 'I didn't want to be the odd one out'. So they compromised, with what they *said* (publicly) and what they *believed* (privately) being completely different, demonstrating an example of *compliance*. Jenness' participants did not face this conflict, as in his study there was no obviously correct answer.

However, conflict is only experienced when individuals disagree with others whom they see as similar to themselves in some relevant way (as in ISI: see Abrams *et al.*, 1990).

Figure 1.5 Normative social influence occurs because of a need to be accepted

INCREASE YOUR KNOWLEDGE

Cognitive dissonance

When individuals have two simultaneous contradictory ideas (cognitions), an unpleasant feeling occurs known as **cognitive dissonance**. Festinger (1957) suggested that altering these cognitions will reduce cognitive dissonance and this is best achieved through conforming. The fact that some examples of conformity cannot be explained by normative or informational social influence, but only by cognitive dissonance, supports this explanation. For example, Bogdonoff *et al.* (1961) found that the conflict created by participants performing an Asch-type procedure increased their stress levels (due to participants having opinions that went against those of the majority), but this was reduced by conforming. This also illustrates how conformity can be seen as a healthy response, as it reduces stress levels.

KEY TERM

Cognitive dissonance – an unpleasant feeling of anxiety created by simultaneously holding two contradictory ideas

CLASSIC RESEARCH

The role of discussion in changing opinion regarding a matter of fact – Arthur Jenness (1932)

Figure 1.6 How many jellybeans are in the jar?

Originally conducted as an investigation into social facilitation (the effect of the presence of others on performance), Jenness' research is now regarded as a groundbreaking study into informational social influence. The original focus was on how group discussion influenced the accuracy of judgement, but the most interesting result concerned how majority influence caused individual judgements to converge (move together). The task Jenness gave his participants, estimating the number of jellybeans in a jar, had no obvious answer; it was difficult to assess the amount. Therefore, the conformity produced was motivated by informational social influence, where individuals in uncertain situations look to others for guidance as to how to behave.

Aim

To investigate whether individual judgements of jellybeans in a jar were influenced by discussion in groups.

Procedure

1 Participants made individual, private estimates of the number of jellybeans in a jar.

2 Participants then discussed their estimates either in a large group or in several smaller groups, discovering in the process that individuals differed widely in their estimates.

3 After discussion, group estimates were created.

4 Participants then made a second individual, private estimate.

Findings

Typicality of opinion was increased – individuals' second private estimates tended to converge (move towards) their group estimate.

Conclusion

The judgements of individuals are affected by majority opinions, especially in ambiguous or unfamiliar situations. Discussion is not effective in changing opinion, unless the individuals who enter into the discussion become aware that the opinions of others are different to theirs.

Evaluation

Although Jenness did not tell participants what the aims of the study were, there was no intentional deception as in other social influences studies. Therefore, the study could be regarded as more ethically sound.

This was a laboratory-based experiment using an artificial, unusual situation. It therefore lacks mundane realism, as it's not an everyday event to be asked how many sweets there are in a jar and so it does not reflect actual behaviour in real-life situations.

The study tells us little, if anything, about majority influence in non-ambiguous situations where people conform to obviously wrong answers (see Asch, 1955).

Jenness' study may involve NSI as well as ISI. After making initial individual estimates, participants then created group estimates; therefore their later second individual estimates may have moved towards their group estimates due to a desire for acceptance (NSI) as well as a desire to be correct (ISI).

YOU ARE THE RESEARCHER

Design a modification of Jenness' study that uses a different conformity task. For example, how could you use a library to conduct the study by asking participants to estimate the number of books? Or your local swimming pool by asking participants to estimate the volume of water? Or indeed a car filled with balloons? Try to think of an example of your own. What would be your independent variable (IV) and dependent variable (DV)? Write a suitable directional (one-tailed) and null hypothesis. Create some appropriate standardised instructions.

Figure 1.7 How could balloons in a car be used to study informational social influence?

For more on research methods, see Chapter 7.

KEY TERM

Confederates – (also known as pseudo-participants and stooges) individuals who pretend to be participants or researchers in research studies, but who are actually playing a part

CLASSIC RESEARCH

Opinions and social pressure – Solomon Asch (1955)

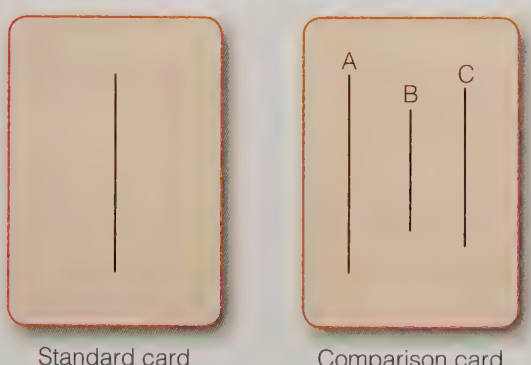


Figure 1.8 Stimulus cards used in Asch's experiment

Solomon Asch, a Polish immigrant to the USA, transformed the study of social influence with his groundbreaking research at Harvard University. He also taught Stanley Milgram, who achieved later fame with his studies of obedience.

Asch was interested in testing conformity to obviously incorrect answers. He criticised research like Jenness' that only involved ambiguous tasks and uncertain situations. Beginning in 1951, Asch conducted a series of experiments, adding and publishing new data as he progressed.

Aim

To investigate the degree to which individuals would conform to a majority who gave obviously wrong answers.

Procedure

1 123 American male student volunteers took part in what they were told was a study of visual perception. Individual participants were placed in groups with between seven and nine others, sat either in a line or around a table, who in reality were pseudo-participants (**confederates**). The task was to say which comparison line, A, B or C, was the same as a stimulus line on 18 different trials. 12 of these were 'critical' trials, where pseudo-participants gave identical wrong answers, and

the naïve (real) participant always answered last or last but one.

2 There was also a control group of 36 participants who were tested individually on 20 trials, to test how accurate individual judgements were.

Findings

1 The control group had an error rate of only 0.04 per cent (3 mistakes out of 720 trials), which shows how obvious the correct answers were.

2 On the 12 critical trials, there was a 32 per cent conformity rate to wrong answers.

3 75 per cent of participants conformed to at least one wrong answer (meaning that 25 per cent never conformed).

4 5 per cent of participants conformed to all 12 wrong answers.

Post-experiment interviews with participants found three reasons for conformity:

- Distortion of action – where the majority of participants who conformed did so publicly, but not privately, as they wished to avoid ridicule.
- Distortion of perception – where some participants believed their perception must actually be wrong and so conformed.
- Distortion of judgement – where some participants had doubts concerning the accuracy of their judgements and so conformed to the majority view.

Conclusions

The judgements of individuals are affected by majority opinions, even when the majority are obviously wrong.

There are big individual differences in the amount to which people are affected by majority influence. As most participants conformed publicly, but not privately, it suggests that they were motivated by normative social influence, where individuals conform to gain acceptance or avoid rejection by a group.

Evaluation

Asch's method for studying conformity became a paradigm, the accepted way of conducting conformity research.

As only one real participant is tested at a time, the procedure is uneconomical and time-consuming. Crutchfield (1954) performed similar research, but improved on the procedure by testing several participants at once.

The situation was unrealistic and so lacked mundane realism. It would be unusual to be in a situation where you would disagree so much with others as to what was the 'correct' answer in a situation.

Asch's study was unethical, as it involved deceit; participants believed it was a study of visual perception. It also involved psychological harm, with participants put under stress through disagreeing with others (see Bogdonoff *et al.* (1961), page 5).

As the overall conformity rate on the critical trials was only 32 per cent (one-third of the participants), the majority of people are actually not conformist, but independent.

(a)

(b)

Figure 1.9a and b A minority of one faces a unanimous majority in Asch's study

CONTEMPORARY RESEARCH

Asch without the actors – Kazuo Mori & Miho Arai (2010)

Figure 1.10 Participants in the study by Mori & Arai

Asch's study became a paradigm study, but a major criticism was that of demand characteristics (see Chapter 7 Research methods) – the confederates weren't trained actors and therefore participants may have realised that the confederates' answers weren't real and so just pretended to conform, as that is what they thought the researcher wanted them to do. Mori & Arai's solution was the MORI technique (Manipulation of Overlapping Rivalrous Images by polarising filters). Participants wore filter glasses, allowing them to look at the same stimuli, but see different things. One participant in each group wore different glasses, thus perceiving a different comparison line to match to the stimulus line. Asch's study also only used males, while this study additionally used females.

ON THE WEB

Listen to a BBC Radio 4 programme about Asch's pioneering research into conformity as part of the *Mind Changers* series:

www.bbc.co.uk/programmes/p00f8mzr

Search for the 'Asch Conformity Experiment' or the 'Asch Experiment' on YouTube to see some videos about the Asch procedure.

Aim

To reproduce the Asch experiment, but without a need for confederates.

Procedure

1 104 Japanese undergraduates were put in same-sex groups of four. Participants sat around a table, with the seat order randomised, and had to say aloud which of three comparison lines matched a stimulus line. The same comparison and stimulus lines were used as in Asch's study.

2 Participants wore sunglasses, supposedly to prevent glare, with the third participant in each group wearing different glasses, which made them see a shorter or longer comparison line to the other three participants on 12 out of 18 'critical' trials. The other six trials were neutral, where participants all saw the same thing.

3 Participants then answered a questionnaire containing 22 questions taken from the interview Asch used with his participants. Among the questions were ones asking whether participants were suspicious about the images seen, whether they noticed the others answering differently, whether they were sure of their answers and whether they were influenced by the others' answers if not confident of their own judgements.

Findings

1 The 78 majority participants who saw the correct-sized comparison lines answered incorrectly 8.2 per cent of the time (77 out of 936 tasks), with no significant gender differences.

2 The 26 minority participants who saw the different-sized comparison lines answered incorrectly 19.6 per cent of the time (61 out of 312 tasks). However, female minority participants answered incorrectly 28.6 per cent of the time, while for males it was only 5 per cent of the time.

3 With females, the results were similar to Asch's, with the minority conforming to wrong answers on the 12 critical trials an average of 4.41 times (3.44 times in Asch's study), but male conformity was not noticeable. This is noteworthy because all participants in the Asch study were male.

Conclusions

Minority participants noticed their judgements were different, but none reported suspicions concerning the honesty of majority participants' answers; therefore it suggests demand characteristics did not occur.

Unlike Asch's findings, the frequency of conformity of minority participants was similar regardless of whether the majority answered unanimously or not. This suggests the number of people in a majority group has little effect on conformity levels (see Asch's variations, page 6).

As women conformed more than men, it suggests cultural or generational differences have occurred since Asch's study.

As no majority participants laughed at the performance of minority participants, conformity cannot have occurred due to fear of ridicule.

Evaluation

This new procedure could provide an effective means of examining conformity, especially in natural settings and in social situations where the use of confederates wouldn't be practical, such as with children.

The new procedure is still unethical, as participants were deceived into thinking the sunglasses were worn to prevent glare.

Conformity may have occurred due to both normative social influence (a desire to be accepted) and informational social influence (a desire to be correct).

Both Asch and Mori & Arai's studies lack mundane realism (can the results of a study be applied to real life), as comparing line sizes isn't something that is often done in real life.

Mori & Arai's study may be more externally valid, as the participants knew each other. Real-life conformity tends to occur among people familiar to each other like family members, rather than in Asch-type situations where decisions are made among strangers.

ON THE WEB

You can read the full research paper of Mori & Arai's conformity study at:

http://dx.doi.org/10.4236/psych.2013.411127

RESEARCH IN FOCUS

1 Studies of conformity tend to be laboratory experiments. Give one advantage and one disadvantage of this method.

2 What experimental design was used in Jenness' study? Give one advantage and one disadvantage of this design.

3 What are the independent variable (IV) and dependent variable (DV) in Jenness', Asch's and Mori & Arai's studies?

4 Mori & Arai's study is somewhat of a replication of Asch's paradigm. What is a replication and why would it be performed?

5 In what way can Asch's and Mori & Arai's studies be considered unethical?

6 Mori & Arai's study was designed to reduce demand characteristics. What are demand characteristics and how did their study attempt to reduce them?

For information on research methods, see Chapter 7.

PSYCHOLOGY IN THE REAL WORLD

Figure 1.11 Better group cohesion can be achieved through informational social influence

One way in which knowledge of conformity can be used in a practical manner is in the formation of groups, for example sports teams. By giving potential members ambiguous tasks, where there is no clear correct answer, individuals will be drawn together through informational social influence into creating a group identity. This would involve identification (maybe even internalisation) and thus would create a stronger group bond than that done through compliance by simply creating normative social influence through getting new members to conform to group norms.

STRENGTHEN YOUR LEARNING

1. In what way does normative social influence differ from informational social influence?
2. What type of conformity is associated with normative social influence?
3. What type of conformity is associated with informational social influence?
4. Can you think of real-life examples of your own of informational social influence and normative social influence?
5. What aspect of Jenness' study involves informational social influence?
6. What aspect of Asch's study involves normative social influence?
7. What is cognitive dissonance? How can it be used as an explanation of conformity?

1.3 Variables affecting conformity

Situational variables

Research into majority influence has identified several **situational variables** – that is, features of an environment that influence levels of conformity – which have an influence over the degree to which individuals conform.

These include **group size** (the number of members within a social group), **unanimity** (to what degree the group members are in agreement with each other) and **task difficulty** (how obvious the correct answer/decision is when regarding a task). Asch performed several variations of his procedure that investigated these factors.

Size of group

Research indicates that conformity rates increase as the size of a majority influence increases, but there comes a point where further increases in the size of the majority don't lead to further increases in conformity.

KEY TERMS

Variables affecting conformity – characteristics that can affect the degree to which individuals conform

Situational variables – features of an environment that affect the degree to which individuals yield to group pressures

Group size – the extent to which the number of people in a group affects the degree to which an individual conforms

Unanimity – the extent to which members of a group agreeing with one another affects the degree to which an individual conforms

Task difficulty – the extent to which how obvious a correct answer seems affects the degree to which an individual conforms

Figure 1.12 Even stickleback fish show conformist behaviour

Research

Asch (1956) found that with one real participant and one confederate conformity was low, rising to 13 per cent with two confederates and 32 per cent with three confederates (around the same rate as in his original study). Adding extra confederates (up to fifteen confederates) had no further effect on the overall conformity rate. Bond & Smith (1996) supported this idea by performing a meta-analysis (see Chapter 7) of 133 Asch-type studies from seventeen countries, and finding that conformity peaks with about four or five confederates. Gerard *et al.* (1968), however, questioned this, finding that conformity rates do rise as more confederates are added, though the rate of increase declines with each additional confederate. Pike & Laland (2010) gave support to Gerard by reporting that stickleback fish demonstrated conformity to feeding behaviour by showing an increased level of copying of a demonstrator fish eating at a food-rich site, but that the rate of conformity increase declined as the number of demonstrator fish increased. This additionally suggests an evolutionary basis to conformity due to its survival value.

Unanimity

Conformity rates have been found to decline when majority influence is not unanimous. The important factor though would seem to be the reduction in the majority's agreement, rather than an individual being given support for their opinions, as conformity drops if a rebel goes against the majority who don't support the rebel's viewpoint.

Research

Asch (1956) found if there was one confederate who went against the other confederates, conformity dropped from around 32 per cent to 5.5 per cent, but if the 'rebel' went against both the other confederates and the real participant, conformity still dropped to 9 per cent, highlighting the powerful effect unanimity of a group can have on getting people to conform.

Task difficulty

Greater conformity rates are seen when task difficulty increases, as the right answer becomes less obvious. This means that individuals will look to others more for guidance as to what the correct response is, suggesting that ISI is the dominant force.

Research

Asch (1956) increased task difficulty by making the comparison lines similar to each other, finding that when he did so participants were more likely to conform to wrong answers, thus demonstrating the effect of task difficulty on conformity and how it can turn normative influence into informational social influence.

KEY TERM

Individual variables – personal characteristics that affect the degree to which individuals yield to group pressures

INCREASE YOUR KNOWLEDGE

Research has also identified important **individual variables** – qualities of an individual that influence their level of conformity, like their gender. Individual and situational variables often interact to determine the degree to which a person conforms.

Individual variables

Gender

Studies can suggest women conform more. Three possible interpretations of this could be that:

1 Females are socialised to conform more. This is supported by Eagly *et al.* (1981), who argued that females learn to

focus more on the quality of relationships with others and take greater responsibility for creating and maintaining interpersonal relationships, thus leading them to conform more. If true, this would involve NSI more than ISI, due to a need for acceptance. Eagly *et al.* also argue that males learn gender roles which demand that they remain independent and so they do not conform readily with others in order to achieve this.

2 Females are biologically programmed to be more conformist as evolution primes them to be more nurturing and co-operative and thus more likely to seek consensus and agreement, especially in times of perceived threat. This was supported by Taylor (2000), who found that stress prompts a 'fight-or-flight' response in males, but a 'tend-and-befriend' response in women, as they produce more oxytocin, which promotes nurturing behaviour.

3 Most studies were conducted by men using male-type tasks which women were less familiar with and so created more informational social influence in females. This was supported by Sistrunk & McDavid (1971) who found that when tasks used had a traditionally male bias, such as involving cars rather than cooking, females felt more uncertain and conformed more.

Mood

Research suggests that humans will conform more when they're in a good mood, perhaps because when happy they are more amenable to agreeing with others. Research has also indicated that people will conform more readily when moving from a fearful to a more relaxed mood.

Tong *et al.* (2008) found that participants were more likely to conform to wrong answers to mathematical questions given by confederates when in a positive rather than neutral or negative mood, illustrating the effect mood can have on conformity levels.

Dolinski (1998) found evidence for a fear-then-relief phenomenon in both field and laboratory settings. Abrupt relief of anxiety states led to participants conforming more readily, again showing how mood states can affect conformity.

Culture

People from different cultures have been shown to conform to different levels, possibly because some cultures are more

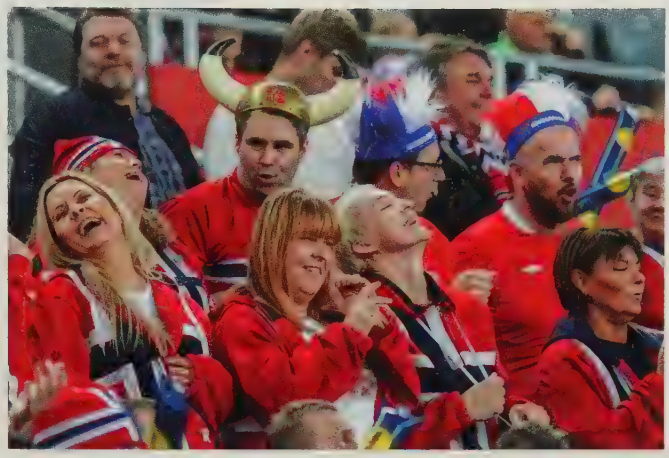


Figure 1.13 Norwegians are conformist as they share cultural values and norms

uniform in their structure, have shared values among their members and thus find it easier to agree with each other. Cultures can also be divided into collectivist ones, where conformity to social norms is more socialised and expected, and individualist cultures that tolerate and encourage more deviance from social norms.

Smith & Bond (1993) found an average conformity rate among collectivist cultures of 25 to 58 per cent, while in individualist cultures it ranged from 14 to 39 per cent, which suggests culture does affect conformity to some extent.

Milgram (1961) found 62 per cent of Norwegian participants conformed to obviously wrong answers concerning the length of acoustic tones. Avant & Knudson (1993) argue that this is due to Norway being a very cohesive country with few ethnic minorities that values and promotes traditional values and frowns upon individualism.

Perrin & Spencer (1980), using the Asch paradigm, found a conformity level of only 0.25 per cent among Yorkshire science students, which could suggest Britons have low conformity levels, but a more sensible interpretation might be that science students are taught to question things and be independent thinkers. Indeed, the same researchers found a similar conformity rate to Asch's in young British criminals, who could be said to lack independent thought.

YOU ARE THE RESEARCHER

Psychology is centred on the designing and carrying out of practical research. Can you design a simple study to compare the level of conformity in science students with PE students? What would the independent variable (IV) be? What experimental design would you use? You will need a measure of conformity to form your dependent variable (DV).

For more on research methods, see Chapter 7.

Figure 1.14 Who conforms more?

RESEARCH IN FOCUS

1. Bond & Smith (1996) performed a meta-analysis of Asch-type studies. What is a meta-analysis?
2. Bond & Smith found a positive correlation between conformity rates and the size of the majority influence. Explain how a positive correlation differs from a negative correlation.
3. Give one strength and one weakness of correlations.
4. What kind of graph would correlational data be plotted on?
5. Asch's variations, performed to identify important variables involved in conformity, involved the use of controlled conditions. What are controlled conditions and why are they used in experiments?

For information on research methods, see Chapter 7.

PSYCHOLOGY IN THE REAL WORLD

Figure 1.15 Individuals are heavily influenced by what peers think of products – advertisers use this as a form of NSI to get us to buy things!

Advertisers often use a knowledge of conformity to increase sales. One useful technique is the 'bandwagon effect', which focuses on the idea that individuals decide what to buy based on what their peers recommend, due to a need to fit in. If you feel everyone in a desirable social group has a product, such as a certain type of phone, then buying that type of phone will make you feel that you will be accepted into that group. Supporting evidence for this form of NSI comes from a Neilson Company study (2009) that surveyed 25,000 people from 50 countries and found that 90 per cent trusted their peers' opinions of products, significantly more than the 69 per cent who trusted media recommendations.

STRENGTHEN YOUR LEARNING

1. In relation to conformity what are:
   (i) individual variables
   (ii) situational variables?
2. Does increasing the size of a group always lead to greater conformity? Explain your answer.
3. What happens to conformity rates when majority influence isn't unanimous? What is the important factor here?
4. Why does conformity increase as task difficulty increases?
5. Why is conformity stronger when individuals identify with members of a group?
6. How might giving public and private answers affect conformity rates?
7. How can social norms affect conformity?
8. Do females or males generally conform more? Explain your answer.
9. How can mood affect conformity levels?
10. Explain why people from different cultures are thought to conform to different levels.

1.4 Conformity to social roles

Each social situation has its own social norms, expected ways for individuals to behave, which will vary from situation to situation – for example, joining the back of a queue when arriving at the till in a shop. Individuals learn how to behave by looking at the **social roles** other people play in such situations and then conforming to them. These learned social roles become like internal mental scripts, allowing individuals to behave appropriately in different settings.

Conformity to social roles therefore involves *identification*, which is stronger than compliance, involving both public and private acceptance of the behaviour and attitudes exhibited.

Conformity to social roles isn't as strong as internalisation though, as individuals adopt different social roles for different social situations and only conform to particular roles while in those particular social situations. With each social role adopted, behaviour changes to fit the social norms of that situation, so as an individual moves to another social situation, their behaviour will change to suit the new social norms, played out through a different social role.

Conformity to social roles is therefore a useful way of understanding and predicting social behaviour, which brings a reassuring sense of order to our social interactions.

Philip Zimbardo's 1973 prison simulation study perfectly illustrates the role of social roles in conformity.

KEY TERM

Social roles – the parts individuals play as members of a social group, which meet the expectations of that situation

CLASSIC RESEARCH

A study of prisoners and guards in a simulated prison – Craig Haney, Curtis Banks, Philip Zimbardo (1973)

Figure 1.16 Zimbardo's study showed how people conform readily to social roles

Zimbardo's study was an attempt to understand the brutal and dehumanising behaviour found in prisons and reported on a regular basis in the American media. Two widely differing explanations were to be explored (see page 27). Firstly, there was the dispositional hypothesis that the violence and degradation of prisons were due to the 'nature' of the people found within the prison system – basically, that both guards and prisoners were 'bad seeds' possessed of sadistic, aggressive characteristics, which naturally led to endless brutality. Secondly, there was the situational hypothesis that saw violence and degradation as a product of 'the prison soil', the interactions between environmental factors that supported such behaviour – in essence that the brutalising and dehumanising conditions of prison led to the brutal behaviour of all concerned. To separate the effects of the prison environment from those within the prison system, Zimbardo built a mock prison that used 'average' people with no record of violence or criminality to play both prisoners and guards – roles that were determined completely randomly. If no brutality occurred, the dispositional hypothesis would be supported, but if brutality was seen, then it must be situational factors that were driving normal, law-abiding people to such behaviour.

Aims

- To investigate the extent to which people would conform to the roles of guard and prisoner in a role-playing simulation of prison life.
- To test the *dispositional* versus *situational* hypotheses that saw prison violence as either due to the sadistic personalities of guards and prisoners, or to the brutal conditions of the prison environment.

Method

1 75 male university students responded to a newspaper advertisement asking for volunteers for a study of prison life paying $15 a day. 21 students rated as the most physically and mentally stable, mature and free from anti-social and criminal tendencies were used (10 as guards and 11 as prisoners). Selection as to who would be guards and who would be prisoners was on a random basis. All participants initially expressed a desire to be prisoners. Zimbardo himself played the role of the prison superintendent.

2 The basement of the psychology department at Stanford University was converted into a mock prison and the experience was made as realistic as possible, with the prisoners being arrested by the real local police and then fingerprinted, stripped and deloused. **Dehumanisation** (the removal of individual identity) was increased by prisoners wearing numbered smocks, nylon stocking caps (to simulate shaved heads) and a chain around one ankle. Guards wore khaki uniforms, reflective sunglasses (to prevent eye-contact) and were issued with handcuffs, keys and truncheons (though physical punishment was not permitted).

3 9 prisoners were placed 3 to a cell and a regular routine of shifts, meal times etc. was established, as well as visiting times, a parole and disciplinary board, and a prison chaplain. The study was planned to run for two weeks.

Findings

1 Both guards and prisoners settled quickly into their social roles. After an initial prisoner 'rebellion' was crushed, dehumanisation was increasingly apparent with the guards becoming ever more sadistic, taunting the prisoners and giving them meaningless, boring tasks to do, while the prisoners became submissive and unquestioning of the guards' behaviour. Some prisoners sided with the guards against any prisoners who dared to protest. **De-individuation** was noticeable by the prisoners referring to each other and themselves by their prison numbers instead of their names.

2 After 36 hours, one prisoner was released because of fits of crying and rage. Three more prisoners developed similar symptoms and were released on successive days. A fifth prisoner developed a severe rash when his parole was denied.

3 Scheduled to run for 14 days, the study was stopped after 6 days when Zimbardo realised the extent of the harm that was occurring, and the increasingly aggressive nature of the guards' behaviour. The remaining prisoners were delighted at their sudden good fortune, while the guards were upset by Zimbardo's decision.

4 In later interviews, both guards and prisoners said they were surprised at the uncharacteristic behaviours they had shown.

Conclusions

The situational hypothesis is favoured over the dispositional hypothesis, as none of the participants had ever shown such character traits or behaviour before the study. It was the environment of the mock prison and the social roles that the participants had to play that led to their uncharacteristic behaviour.

Individuals conform readily to the social roles demanded of a situation, even when such roles override an individual's moral beliefs about their personal behaviour.

Both guards and prisoners demonstrated social roles gained from media sources (e.g. prison films) and learned models of social power (e.g. parent–child, teacher–student).

Evaluation

Individual differences are important, as not all guards behaved brutally. Some were hard but fair; some were brutal; others rarely exerted control over the prisoners. Prisoner behaviour was not identical either.

Zimbardo hoped his research would lead to beneficial reforms within the prison system. Beneficial reforms in the way prisoners were treated, especially juveniles, did initially occur. However, Zimbardo regards his study as a failure in the sense that prison conditions in the USA are now even worse than when he performed his study.

KEY TERMS

Dehumanisation – degrading people by lessening of their human qualities

De-individuation – a state in which individuals have lower self-awareness and a weaker sense of personal responsibility for their actions. This may result from the relative anonymity of being part of a crowd

ON THE WEB

Listen to a BBC Radio 4 programme about Zimbardo's prison simulation study as part of the *Mind Changers* series:

www.bbc.co.uk/programmes/b008crhv

A half-hour BBC television programme about Zimbardo's prison simulation study, including interviews with participants, can be seen on YouTube if you search for 'The Stanford Prison Experiment'.

NB Zimbardo's study contains elements of both conformity and obedience, so take care to use only the aspects that relate to conformity to social roles when answering questions.

RESEARCH IN FOCUS

1 Zimbardo used a self-selected sample.
   (i) Explain how this was achieved.
   (ii) Give one strength and one weakness of self-selected sampling.
2 In Zimbardo's study, guards and prisoners were selected by random sampling.
   (i) What is random sampling?
   (ii) How would it be achieved?
   (iii) Give one strength and one weakness of random sampling.
3 Zimbardo's study is not an experiment. What research method was used?
4 In what ways can Zimbardo's study be considered unethical? Justify your answer.

For information on research methods, see Chapter 7.

STRENGTHEN YOUR LEARNING

1 What are:
   (i) social roles
   (ii) social norms?
2 Why are different social roles adopted for different social situations?
3 Explain why conformity to social roles involves identification, but not internalisation.
4 Why, in Zimbardo's study, if no brutality had occurred, would the dispositional hypothesis have been supported?

ASSESSMENT CHECK

1 The following descriptions relate to conformity.

A Looking to the group for information as to the correct behaviour

B Going along with a group because we accept their belief system as our own

C Going along with a group, even though privately we do not agree with them

D Conforming to group norms publicly and privately, but only temporarily, as conformity is not maintained outside the presence of the group

Copy and complete the table below by writing which description, A, B, C or D, describes which type of conformity. One statement will be left over. **[3 marks]**

Type of conformity	Description
Compliance	
Internalisation	
Identification	

2 Outline what is meant by identification. Give a real-life example. **[3 marks]**

3 Outline and evaluate explanations of conformity. **[16 marks]**

4 Discuss conformity to social roles. **[12 marks]**

5 **a)** Outline the aims and findings of one study of conformity to social roles. **[4 marks]**

b) Describe one ethical issue associated with this study. **[2 marks]**

6 Zimbardo's prison simulation study uses a participant observation study method. Give one strength and one weakness of this type of study. **[2 + 2 marks]**

7 Priti has recently moved to a new school and has found it hard to make new friends, but she noticed that many fellow students support the local football team, Vale City. She bought a replica shirt of the team, even though she had little knowledge of or interest in football, and on wearing the shirt to school, soon found people being friendly to her and including her in their activities.

a) What kind of conformity is being exhibited in the above passage? **[1 mark]**

b) Refer to features of the passage to justify your answer. **[3 marks]**

8 Research studies of conformity generally involve experiments. Describe and evaluate the experimental method. **[6 marks]**

1.5 Obedience and the work of Milgram

Obedience

'I was only following orders.'

Adolf Eichmann (1961)

Obedience is a type of social influence defined as complying with the demands of an authority figure. Obedience generally has a positive influence, as society could not operate in an effective manner unless rules and laws are obeyed and people in authority are acknowledged as having the right to give orders.

However, obedience can also have negative consequences. During the Second World War, under the Nazis, some German citizens unquestioningly followed orders that saw the mass murder of millions of people like the Jews, the Gypsies and people with disabilities – an event that became known as the Holocaust. The American psychologist Stanley Milgram had a personal interest that motivated him to seek explanations for these despicable acts. Milgram came from a New York Jewish family that had fled Europe for America and escaped the Holocaust. He wanted to know whether Germans have a different personality that led them to blindly obey and commit acts of murder without question, or whether people are generally more obedient than they would care to believe. If Hitler and the Nazis had been a British phenomenon, would we have obeyed to the same extent? Milgram had been a student of Asch, whom he sought advice from in designing his classic obedience study.

As Milgram conducted his study, Adolf Eichmann, the Nazi responsible for carrying out *die Endlösung* (the Final Solution), the genocide of millions in the concentration camps, was abducted by Israeli secret service agents in Argentina and taken to Jerusalem to stand trial. Hannah Arendt, in her book *Eichmann in Jerusalem* (1963), famously reported on the *banality* (ordinariness) *of evil* – of how when Eichmann was led into court, instead of the expected inhuman monster, people were confronted by a mild-mannered, likeable man, who had 'merely been doing his job'. His defence for his behaviour was repeatedly to say 'I was only following orders.' A few days after Milgram completed his study, Eichmann was executed. Milgram had originally wanted to conduct his study in Germany after performing what was intended as a pilot study at Yale University. However, the results of this were so dramatic, there was no need.

KEY TERM

Obedience – complying with the demands of an authority figure

Figure 1.17 Obedience is seen as necessary for safety to be maintained

Figure 1.18 Adolf Eichmann: monster or obedient servant?

Figure 1.19 The Nazis dehumanised Jewish people, seeing them as sub-human

Behavioural study of obedience – Stanley Milgram (1963)

Figure 1.20 Stanley Milgram's shock generator

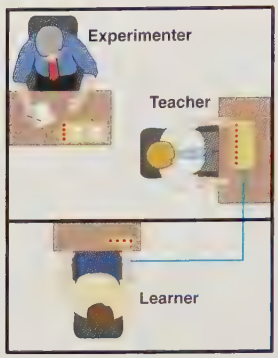
Aims

- To test the 'Germans are different' hypothesis, which claimed that Germans are highly obedient and that Adolf Hitler could not have exterminated the Jewish people and other minority groups in the 1930s and 1940s without the unquestioning co-operation of the German population.
- To see if individuals would obey the orders of an authority figure that incurred negative consequences and went against one's moral code.

Procedure

1 40 American males aged 20–50 years responded to a newspaper advertisement to volunteer for a study of memory and learning at Yale University Psychology Department. They were met by a confederate experimenter wearing a grey lab coat (to give him the appearance of authority), who was actually a biology teacher. He introduced them to Mr Wallace, a confederate participant, a gentle, harmless looking man in his late 50s. The participants were told that the experiment concerned the effects of punishment on learning and that they would be either a 'teacher' or a 'learner', with the roles determined randomly. In fact this was rigged; Mr Wallace was always the learner and the real participant was always the teacher.

2 The experimenter explained that punishments would involve increasingly severe electric shocks. All three



'I observed a mature and initially poised businessman enter the laboratory smiling and confident. Within 20 minutes he was reduced to a twitching, stuttering wreck, who was rapidly approaching nervous collapse. He constantly pulled on his ear lobe, and twisted his hands. At one point he pushed his fist into his forehead and muttered "Oh God, let's stop it". And yet he continued to respond to every word of the experimenter, and obeyed to the end.'

Figure 1.22 The Milgram experiment set up

went into an adjoining room, where the experimenter strapped a consenting Mr Wallace into a chair with his arms attached to electrodes. The teacher was told to give shocks through a shock generator in the next room. This generator had a row of switches each marked with a voltage level. The first switch was labelled '15 volts' and the verbal description 'slight shock'. Each switch gave a shock 15 volts higher than the one before, up to a maximum 450 volts, marked 'XXX'. The real participant received a real shock of 45 volts to convince him that everything was authentic.

3 Participants then read out a series of paired-associate word tasks, to which they received a pre-recorded series of verbal answers from the learner, with the real participant believing these to be genuine responses. The teacher was told by the experimenter to give a shock each time Mr Wallace got an answer wrong. His answers were given by him supposedly switching on one of four lights located above the shock generator. With each successive mistake, the teacher gave the next highest shock, 15 volts higher than the previous one.

4 At 150 volts the learner began to protest and demanded to be released; before this he had been quite willing to take part. These protests became more insistent and at 300 volts he refused to answer any more questions and said he has heart problems that are starting to bother him. At 315 volts he screamed loudly and from 330 volts was heard no more. Anytime the teacher seemed reluctant to continue, he was encouraged to go on through a series of verbal prods, such as 'the experiment requires you continue' and 'you have no choice, you must go on'. If the teacher questioned the procedure, he was told that the shocks will not cause any lasting tissue damage and was also instructed to keep shocking Mr Wallace if he stopped answering.

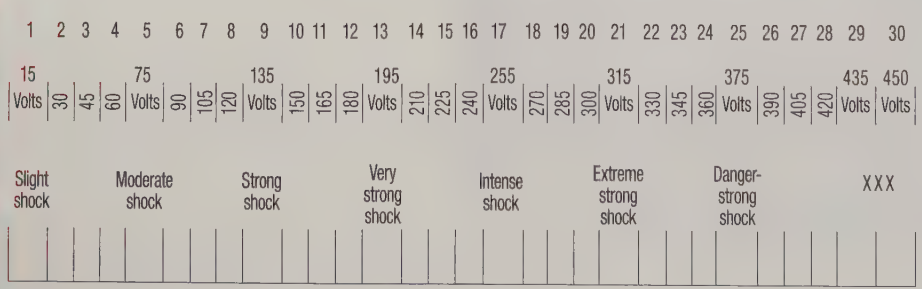

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
15 Volts 30 45 60 75 Volts 90 105 120 135 Volts 150 165 180 195 Volts 210 225 240 255 Volts 270 285 300 315 Volts 330 345 360 375 Volts 390 405 420 435 Volts 450 Volts
Slight shock
Moderate shock
Strong shock
Very strong shock
Intense shock
Extreme strong shock
Danger-strong shock
XXX

Figure 1.21 The levels of electric shock used in the Milgram experiments

Findings

1 Quantitative results – obedience was measured as the percentage of participants giving shocks up to the maximum 450 volts. In the main version of the experiment the obedience rate was 62.5 per cent (25 out of 40 participants). An earlier 'remote victim' version with no pre-recorded responses, but the victim pounding on the walls instead, gained an obedience rate of 65 per cent (26 out of 40 participants). 100 per cent of participants continued up to at least 300 volts.

2 Qualitative results – many participants showed distress, such as twitching, sweating or giggling nervously, digging their nails into their flesh and verbally attacking the experimenter. Three participants had uncontrollable seizures. Some participants showed few if any signs of discomfort, instead concentrating dutifully on what they were doing.

Conclusions

The 'Germans are different' hypothesis is clearly false – Milgram's participants were 40 'ordinary' Americans. Their high level of obedience showed that people obey those regarded as authority figures. If we had lived in Nazi Germany in the 1930s, we might have acted just as obediently. The results suggest that obeying those in authority is normal behaviour in a hierarchically organised society. We will obey orders that distress us and go against our moral code.

Evaluation

The **Milgram paradigm** – Milgram established the basic method, or paradigm, for studying obedience, which was adopted by many subsequent researchers.

It was intended as a pilot study – it is more useful to consider the research inspired by Milgram's study than the study itself. Milgram was so astounded by the results that he subsequently conducted 19 variations of the study, each time varying one aspect of the procedure, to try and identify the reasons why people were so obedient.

Practical application – it was hoped that Milgram's findings would help form strategies to reduce destructive blind obedience. Unfortunately, not much has changed since 1963; horrendous crimes are still committed by people operating under the excuse of 'simply following orders'.

Type of study – most people presume that Milgram's study is an experiment; indeed Milgram referred to it as such. However, there is no independent variable and in reality it is more of a controlled observation. It can, however, be considered an experiment if Milgram's variations of his study are considered. The independent variable (IV) then becomes which particular variation a participant performs, for example, having the experimenter not present in the room, as opposed to him being in the room.

INCREASE YOUR KNOWLEDGE

Milgram's work into obedience can help explain the abuse of Iraqi prisoners by US troops in the Abu Ghraib prison in Iraq in 2004. Several stages of abuse were involved. Firstly, *gradual commitment*, where initial abuses were minor, but paved the way for the acceptance of more serious abuse. This was similar to the initial shocks in Milgram's study only being minor ones and only increasing in small 15-volt increments. Secondly, *senior role*, where low-ranking troops, like the teacher in Milgram's study, were given important roles in controlling prisoners. Thirdly, *dehumanisation*, where the prisoners were degraded, making it easier to suspend morality and abuse them.

Figure 1.23 Lynndie England arrives at her trial for mistreatment of prisoners in Abu Ghraib

STRENGTHEN YOUR LEARNING

1 Define obedience.
2 What is meant by the Milgram paradigm?
3 What percentage of participants gave the maximum 450 volt shocks in Milgram's study?
4 Why can the 'Germans are different' hypothesis be rejected?
5 What practical application did Milgram hope would come from his study? Was this hope realised?

KEY TERM

Milgram paradigm – experimental procedure devised by Stanley Milgram for measuring obedience rates

ON THE WEB

To read an account of what it was like to be one of the 40 original participants, go to:

https://archive.jewishcurrents.org/2004-jan-dimow.htm

Here you will find the personal account of Joseph Dimow.

You can also find a detailed account of Milgram's life and work at:

www.psychologytoday.com/articles/200203/the-man-who-shocked-the-world

An excellent modern day replication of Milgram's study can be seen on YouTube if you search for 'Milgram's Obedience to Authority Experiment'.

A video of Milgram's actual study, including commentary from Milgram himself, can be seen on YouTube if you search for 'Milgram Obedience Study'.

Figure 1.24 Joseph Dimow

RESEARCH IN FOCUS

1. Milgram's study produced both quantitative and qualitative data. What is the difference between these two forms of data?
2. Give one example of quantitative and qualitative data from Milgram's study.
3. Milgram's study was intended as a pilot study.
   (i) What is a pilot study?
   (ii) Why are pilot studies conducted?
4. Why is Milgram's original study not actually an experiment? At what point does his study become an experiment?

For information on research methods, see Chapter 7.

KEY TERM

Ethical considerations – moral aspects of research that need to be taken into account before studies are conducted

Ethical considerations

Milgram's study raised several ethical issues and indeed Milgram had his membership of the American Psychological Association (APA) suspended after his research was published. His work though was eventually ruled ethically acceptable, and he won a major award for it. Maybe what upset people was not the abuse of ethics, but the upsetting results that went against the accepted ideas of free will and personal responsibility for one's behaviour. It was the work of Milgram and similar psychologists, like Asch, which helped to identify the ethical issues that psychologists must consider when planning and conducting research. Without these studies of social influence, there would not be ethical codes and guidelines. Let us now consider the arguments for and against Milgram's study being unethical. (See also Burger (2009), page 24, for an attempt to conduct Milgram's paradigm in a more ethical manner.)

Psychological harm

For: Milgram is accused of exposing his participants to severe stress, which is supported by the extreme physical reactions many participants exhibited (three had seizures).

Against: Only 2 per cent had any regrets about being involved and 74 per cent thought that they had learned something useful about themselves. A thorough debriefing was carried out where participants met the unharmed learner and, a year later, all 40 participants received psychiatric assessments, none showing any signs of long-term damage. Therefore, the study can be justified by recourse to a cost–benefit analysis, where the short-term damage (stress reactions) is outweighed by the lack of long-term damage and the valuable results obtained.

For: However, Perry (2012) claims that debriefing of subsequent participants (Milgram eventually tested nearly 3,000 participants) didn't always occur, as Milgram was worried about news of the study becoming common knowledge before he finished his work. He believed a debriefing might confound his results, and that this was enough of a reason to deny debriefing directly after the experiment ended.

For: Baumrind (1964) accused Milgram of abusing his participants' rights and feelings.

Against: Baumrind's criticism assumes that the experimental outcome was *expected*. In fact, Milgram was surprised by the high obedience rate. Prior to the experiment, Milgram asked 40 psychiatrists what percentage of people would obey up to 450 volts. Their prediction was only 1 per cent.

Deception/informed consent

For: Milgram did deceive his participants. He said that the study was concerned with memory and learning. Only after volunteers had agreed to take part were the electric shocks mentioned. Also, Mr Wallace was an actor who never actually received any electric shocks and the researcher, Mr Williams, was also a confederate. Therefore, participants could not give informed consent – they volunteered without knowing the true purpose or procedure.

Against: Milgram defended his use of deception by debriefing his participants. Also, deception was necessary if participants were to behave realistically – the participants had to believe they were real shocks; otherwise the results could not be generalised to real-life situations.

Right to withdraw

For: No explicit right to withdraw was given to the participants before the study started and indeed attempts to withdraw were met with the verbal prods that encouraged them to continue.

Against: Milgram argued that participants did have the right to withdraw, as 35 per cent of them exercised this option and refused to carry on.

Inducement to take part

For: The advert asking for volunteers for the study stated that they would be paid $4 each for taking part (plus 50 cents car fare), which may have led participants to believe they had to finish the study, i.e. give the shocks in order to receive the money.

Against: The advert also stated that monies would be paid upon arrival at the laboratory and no participant ever claimed they thought they had to obey to get paid.

STRENGTHEN YOUR LEARNING

Make a list of the ethical issues contained within Milgram's study. Detail the evidence that supports these issues being violated and then detail any counter-arguments against such evidence. (Using a cost–benefit analysis could be a useful technique.) Using material in this way is a highly effective way of building elaboration into your answers, especially for the 16-mark extended writing questions.

Methodological criticisms

Several methodological criticisms have been made about Milgram's study concerning both how the study itself was conducted and the usefulness of the results it generated. Subsequent studies allow us to assess these criticisms.

Figure 1.25 Gina Perry, in her book *Behind the shock machine*, has cast doubts on several of Milgram's claims

Internal validity

Internal validity concerns the degree to which findings are attributable to the effect of the IV on the DV (see Research methods, page 289). Milgram's study would lack internal validity if participants didn't believe the shocks were real.

Orne & Holland (1968) criticised the internal validity of Milgram's study, as they believed participants delivered the shocks because they knew they were not real. However, 75 per cent of participants in post-study interviews said they believed them to be real. The extreme physical responses of many of the participants also suggest they believed them to be real. However, Perry (2012) traced as many original participants as she could and claimed the true figure was only about 50 per cent.

External validity

Can the results of Milgram's study be generalised beyond the experimental setting? The findings have been criticised in terms of whether they are representative of females, other cultures, people of today, and whether the results relate to real-life settings. Let us examine each of these in turn:

Androcentrism

As only males were used in Milgram's study, the accusation is that the results cannot be generalised to females. Many people would imagine that females would be much less obedient to orders with destructive consequences, yet research often surprisingly suggests that the opposite is indeed true. Maybe females can be more obedient and unquestioning of orders because their gender roles may dictate that they be more submissive, especially to assertive males.

Research

Sheridan & King (1972) got male and female participants to give real electric shocks to a puppy every time it responded to a command incorrectly, participants believing the shocks increased by 15 volts each time. The shocks were actually only mild ones (though severe enough to make the puppies jump and howl). Eventually, an undetectable anaesthetic gas was pumped in to render the puppy unconscious,

KEY TERMS

Internal validity – the extent to which a study measures what it claims to measure

External validity – the extent to which conclusions can be generalised beyond the setting of a study

Androcentrism – a bias in psychological research in which a male perspective is over-emphasised at the expense of a female one

making the participants think they had killed it. Although visibly upset, 54 per cent of males and 100 per cent of the females obeyed up to an apparent 450 volts, supporting the idea that Milgram's study was **androcentric**, as females can be more obedient.

Cultural bias

As Milgram's study only used American participants, the results can be said to be not necessarily generalisable to people of other cultures. Indeed, research has backed up this criticism, with varying levels of obedience found between different cultures. It may be that different cultures obey to different levels, because of cultural differences regarding authority.

Research

Meeus & Raaijimakers (1986) found the highest recorded obedience level with the Milgram paradigm of 90 per cent in Spanish participants, while Kilham & Mann (1974) used the Milgram paradigm to find the lowest cultural obedience rate of 28 per cent among Australians. This backs up the idea of obedience levels reflecting cultural attitudes to authority, as Australians have a traditionally negative view of authority. (Interestingly, Mantell (1971) used the Milgram paradigm to find a relatively high obedience rate of 80 per cent in Germany.)

Historical validity

It has been suggested that the high rate of obedience found in the Milgram study was a product of American culture being very authoritarian and obedient during the early 1960s, and, as such, doesn't reflect obedience levels today. Burger (2009) used an adaptation of the procedure to investigate whether this criticism is valid (see Contemporary research, page 24).

Ecological validity

Milgram's paradigm has been criticised for how unrepresentative it is of real-life occurrences (giving electric shocks to people). Hofling *et al.* (1966) performed a study to see if this was true (see Classic research, page 25).

INCREASE YOUR KNOWLEDGE

Milgram's shock machine still exists. It is kept at the Archives of the History of American Psychology at the University of Akron. For many years, it was part of a travelling psychology exhibit created by the American Psychological Association.

In 1949, at James Monroe High School in the Bronx, a tough 'ghetto' area of New York, two boys sat next to each other in class. One was Stanley Milgram and the other was Philip Zimbardo. Both had dreams of escaping the ghetto and doing something worthwhile with their lives and both went on to become world-renowned psychologists – Milgram for his obedience study and Zimbardo (1971) for his prison simulation study.

The man who played the learner in Milgram's original study suffered a heart attack three years later and was resuscitated by someone who had been a teacher in the study. Unfortunately, the man still died. Milgram himself would die aged just 51 in 1984 after his fifth heart attack.

Figure 1.26 James Monroe High School, where both Zimbardo and Milgram pledged to do something worthwhile with their lives

Replicating Milgram: Would people still obey today? – Jerry Burger (2009)

Figure 1.27 Jerry Burger has attempted to replicate Milgram's study in an ethically acceptable way

Milgram's study is one of the most famous psychology experiments ever undertaken, but would similar results be found today? Milgram's study would also be unethical under present-day guidelines; however, Burger developed a version of Milgram's procedure that addressed ethical concerns, so that a comparison could be made between obedience rates in the 1960s and now.

Aim

To develop a variation of Milgram's procedures allowing comparison with the original investigation while protecting the well-being of participants.

Procedure

Most of Milgram's procedure was followed, including the words used in the memory test and the experimenter's lab coat. However, important changes were made.

1 No one with knowledge of Milgram's study was used and the maximum apparent shock was 150 volts, the level at which the learner first cries in pain, in order to protect participants from intense stress.
2 A two-step screening process for participants was used to exclude any who might react negatively. No one with a history of mental problems or stress reactions was accepted. This excluded 38 per cent of potential participants.
3 Participants were told three times they could withdraw at any time and received only a 15-volt real shock, as opposed to the 45 volts applied in Milgram's study.
4 The experimenter was a clinical psychologist who could stop the procedure at any sign of excessive stress.
5 70 male and female participants were used. The relevant ethical monitoring body approved the procedure.

Findings

Burger found an obedience rate of 70 per cent, with no difference between male and female obedience rates. Another condition, where a second defiant confederate teacher was introduced, failed to reduce obedience significantly, unlike Milgram's findings.

Conclusions

It is possible to replicate Milgram's study in a fashion non-harmful to participants. Obedience rates have not changed dramatically in the 50-odd years since Milgram's study.

Evaluation

Burger's technique permits obedience research to be conducted that has not been possible for decades.

Burger's efforts to improve the ethics of the study are uncertain in their effectiveness and pose impractical demands.

The different procedures used by Milgram and Burger do not allow a clear comparison of results.

The study highlights the difficulties of extending research on destructive obedience in the context of contemporary ethical guidelines.

ON THE WEB

You can watch a 35-minute ABC television programme about Jerry Burger's study, including extensive footage from the study, if you search YouTube for 'ABC Milgram remake'.

There's also an in-depth review of the study from the American Psychological Association Monitor at:

www.apa.org/monitor/2009/05/ethics.html

CLASSIC RESEARCH

An experimental study into the nurse–physician relationship – Charles Hofling *et al.* (1966)

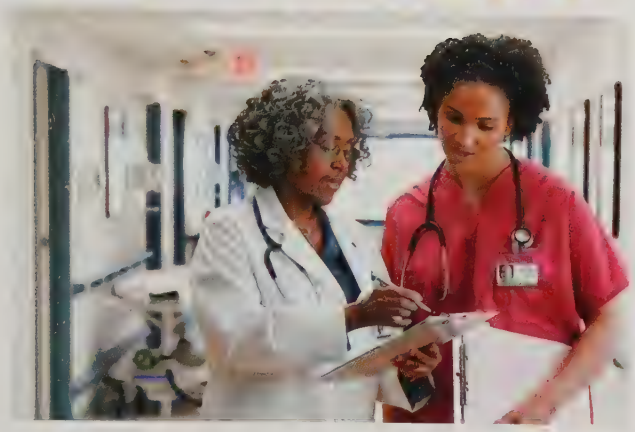


Figure 1.28 Would nurses obey hospital rules or the commands of a doctor?

A number of naturalistic obedience studies in real-life settings have been carried out, but Hofling's study, carried out as part of a real hospital's normal routine, is significant because of its alarming findings.

Aim

To see whether nurses would obey orders from an unknown doctor to such an extent that there would be risk of harm.

Procedure

A confederate, 'Dr Smith', allegedly from the psychiatric department, instructed 22 nurses individually by phone to give his patient 'Mr Jones' 20 mg of an unfamiliar drug called Astrofen (which was actually a sugar pill). Dr Smith was in a hurry and would sign the authorisation form later on. The label on the box stated the maximum daily dose was 10 mg. So if a nurse obeyed instructions, she would be giving twice the maximum dose. Also, hospital rules required doctors to sign authorisations before medication was given. Another rule demanded that nurses should be certain anyone giving medical instructions was a genuine doctor.

Findings

Of the 22 nurses, 21 (95.4 per cent) obeyed without hesitation. A control group of 22 nurses were asked what they *would have done* in that situation: 21 said they would not have obeyed without authorisation, or exceeded the maximum dose.

Conclusions

Hofling *et al.* concluded that the power and authority of doctors was a greater influence on the nurses' behaviour than basic hospital rules. Also, that what people *say* they would do and what they *actually* do can be very different.

Evaluation

Hofling's study suggests that nurses and institutional staff should have special training in following rules rather than orders from authority figures.

Hofling's study seems relevant to real-life settings. However, Rank & Jacobsen (1977) reported that the drug was unfamiliar to nurses and that they had not been allowed to consult with each other, as was normal practice. When a familiar drug, Valium, was used, and they were allowed to speak to their peers, only two out of 18 nurses (11 per cent) obeyed, suggesting that Hofling's study may not have external validity after all, which casts doubts on Hofling's findings, supporting the idea of Milgram's study being ecologically valid.

STRENGTHEN YOUR LEARNING

1. Why might Milgram's study lack internal validity? Does the evidence suggest it does?
2. In what ways might Milgram's study lack external validity? What does the evidence suggest?

YOU ARE THE RESEARCHER

A major problem with obedience studies is often their lack of relevance to real-life situations. However, one way of overcoming this difficulty is to carry out the following study looking at people's obedience rates in everyday life. You will need two signs with the same wording: *Use other bench. By order.* One sign should be printed professionally to give it an air of authority, and the other should be poorly made with scruffy writing.

Place one sign on a bench in an area where there are other benches people can use, and count how many people obey or disobey the sign in a given time period. If several people approach the bench simultaneously, you only count the behaviour of the first person, as the others may be influenced by the first person's actions. Repeat the procedure using the scruffy sign. If people do obey authority, more people should obey the neat sign. If you have not got suitable benches, then use two adjoining doors and have signs saying: *Please use other door.*

For more on research methods, see Chapter 7.

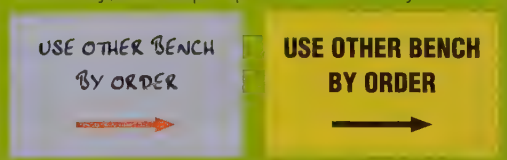


Figure 1.29 Which of these signs are you more likely to obey?

IN THE NEWS

Ψ The Psychological Enquirer

Plane crash kills 18: co-pilot dared not disobey captain

Figure 1.30 The town of Hibbing

On the 3rd of December 2003 the *New York Times* reported how Northwest Airlink Flight 5719 descended too quickly and crashed before it hit the runway in Hibbing, Minnesota. All 18 people on board died. The aircraft struck the top of a tree, continued for 634 feet, and then struck a group of aspen trees. Finally, the plane collided with two ridges and came to rest inverted and lying on its right side. The crash site was so isolated and the night so dark and thick with fog and freezing drizzle that no one saw the plane hit the side of the hill.

Investigators recovered the plane's cockpit voice recorder, which would turn out to be a crucial piece of evidence, for, rather than mechanical failure, the tragedy would prove to be a result of obedience to authority.

Investigators found that the captain had flown the plane inappropriately and given incorrect instructions, but had not been challenged in doing so by his co-pilot, a new probationary employee who knew that to challenge his captain could have a detrimental effect on his career. Further investigation revealed that other co-pilots had not previously reported that the captain often issued irregular commands, violated company policies by sleeping inflight and also flew with mechanical irregularities.

Why would co-pilots put passengers and themselves in such danger by not challenging the captain's behaviour and orders? Because he was perceived as a legitimate authority figure that his co-pilots had been trained to obey without question. This was not an isolated incident; Tarnow (2000) reported that a major contributory factor in 80 per cent of air traffic accidents was the power stemming from the captain's absolute authority, which led to co-pilots feeling unable to challenge wrong decisions. Similar disastrous consequences have occurred in other institutional settings for similar reasons (see the tragedy of Wayne Jowett, below). Through psychological research, such as that by Milgram (1963), obedience to authority has become better understood, leading to the formation of practical applications that may prevent such disasters occurring in the future.

PSYCHOLOGY IN THE REAL WORLD

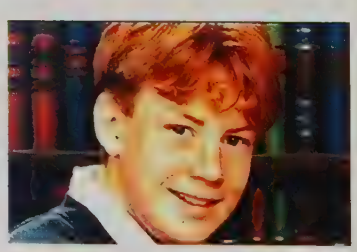


Figure 1.31 Wayne Jowett

Tragic incidents, like the crash of Northwest Airlink Flight 5719 (see 'In the News', above), caused through wrongful obedience to authority figures are all too common. In 2001, 18-year-old Wayne Jowett, on remission from leukaemia, died when a cancer drug was wrongly injected into his spine instead of a vein. He died one month later from creeping paralysis after being in such pain it sometimes took six nurses to hold him down. A junior doctor correctly injected a first drug, Cytosine, into Wayne's spine and was surprised when he was passed a second syringe

of Vincristine and told to inject it by a more senior doctor into the boy's spine, as he was aware this wasn't the correct procedure. However, as with the nurses in Hofling's study (see page 25), he didn't challenge the decision on the assumption the more senior doctor knew what he was doing. In such institutional settings, there is a clear command structure and an expectation of unquestioning obedience, which can lead to terrible mistakes. Staff members need to be trained to follow official procedures, not authority figures, and to have confidence to challenge authority figures' commands if they believe them to be wrong or potentially harmful. As part of their training, aeroplane co-pilots now undergo simulations where captains issue them with wrongful orders, so that they are fully familiar with how to resist such instructions.

1.6 Explanations for obedience

Explanations of obedience attempt to give reasons as to why people obey. Such explanations include *situational* ones, which focus on environmental factors associated with obedience, as well as *dispositional* ones, which focus instead on personality characteristics that influence people to obey. Explanations do not necessarily work in isolation to each other, so it may well be that two or more explanations can be combined together to show why an individual obeys in a given situation.

The agentic state

Milgram (1974) proposed the idea of the agency theory, which argues that we are socialised (taught by society) from an early age to learn that obedience to rules is necessary to keep stability within society. However, in order to achieve this, an individual has to give up some of their free will (the ability to have conscious control over thoughts and actions). When an individual does have control and acts according to their own wishes, they are said to be in an **autonomous state** and thus see themselves as personally responsible for their actions.

However, when an individual obeys an authority figure they give up some free will and enter an **agentic state**, where they see themselves as an agent of the authority figure giving the order. It is therefore the authority figure who is seen as responsible for the consequences of the individual's actions. In this way, a person becomes de-individuated, losing their sense of individuality, and so may obey orders that go against their moral code, because they don't see themselves as responsible for their behaviour.

The agency theory therefore sees obedience as occurring in hierarchical social systems (systems with people having different ranks to each other), where individuals will act as agents for and so obey those of perceived higher ranks than themselves. Adolf Eichmann, the Nazi responsible for the extermination of millions during the Second World War (see page 17), saw himself as in the agentic state with his defence that he was 'only following orders' – in other words, that he was merely complying with the orders of a higher-ranked authority than himself, and so was not himself responsible for the genocide.

KEY TERMS

Autonomous state – opposite side of the agentic state, where individuals are seen as personally responsible for their actions

Agentic state – the way in which an individual may obey an order, perhaps to do something that they see as 'wrong', because the individual hands over the responsibility for the outcome of the action to the authority figure. The individual sees themselves as acting as an agent for the authority figure and therefore does not feel responsible

Research

Milgram (1974) reported that in a 'remote authority' variation of his procedure when the confederate researcher wasn't in the same room as the teacher, but gave orders on a telephone link, obedience declined from 62.5 per cent to 20.5 per cent. This suggests participants were in the autonomous state and saw themselves as responsible for their actions.

Milgram (1963) reported that many participants in his study were under moral strain, as during debriefing many participants admitted they knew what they were doing was wrong (their physical reactions back this up too). However, they continued to obey, which suggests they were in an agentic state and felt they had to obey the orders of a higher-ranked authority figure.

Legitimacy of authority

Obedient individuals accept the power and status of authority figures to give orders; they are seen as being in charge. This again links to the agency theory that individuals are socialised to recognise the value of obedience to authority figures as helping to keep stability in society. From an early age, people experience examples of social roles relating to master and servant relationships, such as parent–child, teacher–student, etc., where we learn that those higher in the social hierarchy should be obeyed. The emphasis here, therefore, is on doing one's perceived duty.

KEY TERM

Legitimacy of authority – the degree to which individuals are seen as justified in having power over others

Research

Milgram (1963) reported that some participants in his study ignored the learner's apparent distress, showing little sign of harm themselves, but instead focused on following the procedure, for example by pressing the buttons properly. In this way, they could be seen to be doing their duty and thus recognising the **legitimate authority** of the researcher.

ON THE WEB

A Nazi propaganda film from 1940 which dehumanises Jewish people by portraying them as a plague of rats, which made it easier to carry out orders for their destruction, can be seen on YouTube if you search for 'Nazi PSYOP on Jewish Immigration'.

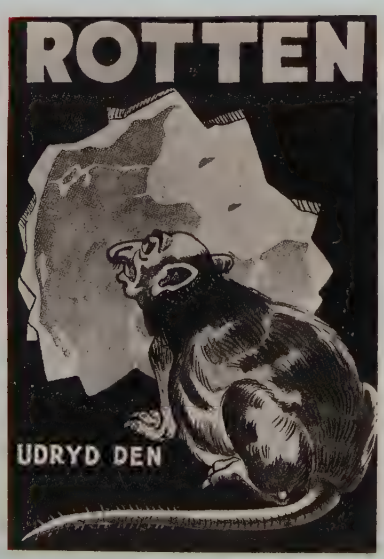


Figure 1.32 Nazi propaganda dehumanised Jewish people by portraying them as rats

INCREASE YOUR KNOWLEDGE

An additional explanation

Dehumanisation

This explanation argues that it is easier to obey orders that result in negative consequences if the recipients of the behaviour are first dehumanised – made lesser people in some way – so that they are perceived as somehow deserving of the treatment handed out to them. This also results in less moral strain being felt when carrying out such orders. The Nazis portrayed Jewish people as *Untermenschen* (subhuman) and themselves as *Übermenschen* (superior humans). They argued that inferior races were a threat to genetic purity and the natural superiority of the German Aryan race. Propaganda films of the time showed Jewish people as hordes of filthy rats invading German homes and spreading disease. Such dehumanisation made orders to murder Jews easier to obey. More recently, the massacre of hundreds of thousands of Tutsis by Hutus in the Rwandan civil war of 1994 can be seen in similar terms. The Hutus saw the Tutsis as *inyenzi*, or cockroaches – parasites that must be crushed. The resulting ethnic violence was made easier by this dehumanisation.

Milgram (1963) reported that some participants in his study made comments along the lines of '*That guy in there was so stupid he deserved to be shocked*', illustrating how dehumanisation can lessen the moral strain of obeying orders with destructive consequences.

1.7 Situational variables affecting obedience

The external explanation

Situational variables form an *external* explanation of obedience, where features of an environment (aspects of a situation) are seen as affecting obedience levels. Milgram's variations of his procedure, performed after his main study, identified several important situational factors.

KEY TERM

Situational variables explanation – an external explanation that sees features of an environment affecting the degree to which individuals yield to authority figures

Proximity

Proximity involves how aware individuals are of the consequences of their actions in obeying authority figures. When the physical distance between the teacher and the learner in Milgram's study was made closer, participants were less able to divorce themselves from the consequences of their actions and so obedience rates were lower. In a war situation, it could be argued that obeying an order to press a button from a remote location that releases a missile which kills thousands in a distant country is easier to do than obeying an order to shoot a single person standing next to you, where the consequences of your actions would be much plainer to see.

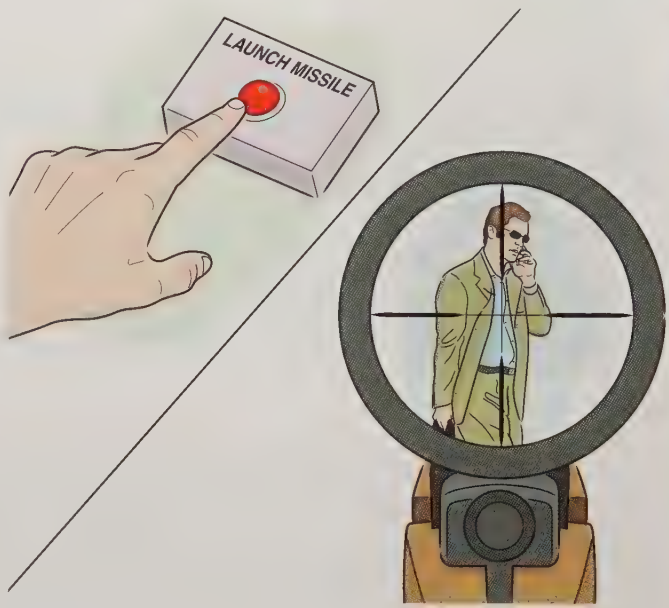


Figure 1.33 Proximity increases awareness of obeying an order: which of these orders to kill would be easier to comply with?

Research

Milgram (1974) found that when the teacher and learner were in the same room as each other, so that the teacher could see the learner's distress, obedience declined from 62.5 per cent to 40 per cent. When the teacher had to force the learner's hand onto an apparent shock plate, increasing the realisation of their actions, obedience fell further to 30 per cent. This illustrates the effect proximity has on obedience levels.

Location

The **location** of an environment can be relevant to the amount of perceived legitimate authority a person giving orders is seen to have. In locations that add to the perceived legitimacy of an authority figure, obedience rates will be higher. Obedience rates are often highest in institutionalised settings where obedience to authority figures is instilled into members. For example, in the army when a commanding officer orders a soldier to jump in the air, the expected response is 'how high?' not 'why?' It could be argued that a contributory factor to the high obedience rate seen in Milgram's study was the fact that the study took place at Yale University, an Ivy League, high-status institution.

KEY TERMS

Proximity – the extent to which how aware individuals are of the consequences of their actions affects the degree to which they obey authority figures

Location – the extent to which external setting affects the degree to which an individual will obey an authority figure

Research

Milgram (1974) performed a variation of his study in an office block in a run-down part of town and found obedience dropped from 62.5 per cent to 47.5 per cent, which suggests the change in location from Yale University reduced the perceived legitimacy of the authority figure giving the orders, leading to a significant drop in the obedience rate.

Figure 1.34 Uniforms give a sense of legitimacy to authority

KEY TERMS

Uniform – the extent to which the clothing worn by an authority figure affects the degree to which an individual will obey their commands

Individual variables (dispositional explanation) – an internal explanation that sees personal characteristics as affecting the degree to which individuals yield to authority figures

Authoritarian personality – description of a person who holds rigid beliefs, is intolerant of ambiguity, submissive to authority and hostile to those of lower status or members of an out-group

Uniforms

The wearing of **uniforms** can give a perception of added legitimacy to authority figures when delivering orders, thus increasing obedience rates. In Milgram's experiment, the confederate researcher wore a lab coat to give him such an air of authority (he was also chosen for his tall height, which was thought to add to his status).

Research

Bickman (1974) found that when ordering people on a New York street to pick up rubbish, loan a coin to a stranger or move away from a bus stop, 19 per cent would obey his research assistant when he was dressed in civilian clothes, 14 per cent when dressed as a milkman, but 38 per cent when he wore a security guard's uniform. In a variation of the study, Bickman found people would even obey the guard when he walked away after giving the order, which suggests they obeyed not because they felt forced to do so, but because they believed he had legitimate authority.

1.8 Individual variables affecting obedience

The internal explanation

The dispositional explanation for obedience – the authoritarian personality

The **dispositional explanation** is an *internal* explanation, as the focus is on the idea that certain personality characteristics are associated with higher levels of obedience. This formed the basis of Milgram's research aim: to investigate whether Germans had a different personality type that made them unquestioningly obedient to authority figures.

The **authoritarian personality** was first proposed by Fromm (1941) as an attempt to explain those holding right-wing, conservative views and is a personality type characterised by a belief in absolute obedience, submission to authority and domination of minorities. It is probably best summed up by the phrase 'Might is right'.

Adorno *et al.* (1950) saw people of this type as having insecurities that led them to be hostile to non-conventional people and having a belief in a need for power and toughness, which leads them to be highly obedient to authority figures. Adorno additionally saw the personality type as being shaped in early childhood by hierarchical, authoritarian parenting. To measure an individual's degree of authoritarian personality, Adorno constructed the F-scale questionnaire, which has 30 questions assessing nine personality dimensions. (The 'F' stands for 'fascist'.)

More recently, Jost *et al.* (2003) offered a more cognitive explanation by claiming that the authoritarian personality is motivated by thought processes which underpin a desire to reduce the fears and anxieties that social change brings. Strict obedience to authority is seen as helping to prevent disruptive social change.

Research

Zillmer *et al.* (1995) reported that sixteen Nazi war criminals scored highly on three of the F-scale dimensions, but not all nine (as was expected), giving only limited support for the concept.

Elms & Milgram (1966) found that participants in Milgram's study, who were highly obedient, were significantly more authoritarian on the F-scale than disobedient participants, supporting the idea of a link between authoritarian personality type and obedience. Further support came from Altemeyer (1988), who reported that participants with an authoritarian personality type who were ordered to give themselves shocks, gave higher shocks than those without the personality type.

Evaluation

- Although the F-scale has some research support, supposedly authoritarian individuals do not always score highly on all the dimensions as the theory would predict.
- The F-scale suffers from response bias, as the scale is worded in a confirming direction. Therefore, if individuals agree with items they are rated as authoritarian. Altemeyer (1981) produced the less biased Right Wing Authoritarianism scale (RWA), which has an equal number of pro- and anti-statements.
- The theory is politically biased, as individuals with an authoritarian personality are seen as only existing on the conservative, right wing of political viewpoints.

STRENGTHEN YOUR LEARNING

1. How do the agentic and autonomous states differ from each other?
2. What is meant by legitimacy of authority?
3. How might dehumanisation have occurred in Milgram's study?
4. How do situational variables that affect obedience differ from dispositional ones?
5. In what ways might the following affect obedience rates?
   - (i) proximity
   - (ii) location
   - (iii) uniforms.
6. Explain why those with an authoritarian personality might be more obedient to authority.

RESEARCH IN FOCUS

1. Bickman's (1974) obedience study was a field experiment. How does a field experiment differ from:
   - (i) a laboratory experiment
   - (ii) a natural experiment?
2. Give one strength and one weakness of a field experiment compared to a laboratory study.
3. The authoritarian personality is measured by the F-scale questionnaire.
   - (i) What is the difference between open and closed questions in questionnaires?
   - (ii) Explain two advantages and two disadvantages of a questionnaire such as the F-scale.
   - (iii) In what way does a questionnaire differ from an interview?

For information on research methods, see Chapter 7.

ASSESSMENT CHECK

1 Which of the following terms best matches the descriptions below? Choose one term that matches each description and write either A, B, C, D or E in the box next to it. Use each letter once only. One term will be left over.

A Agentic state

B Situational variables

C The authoritarian personality

D Proximity

E Legitimacy of authority

(i) The degree to which individuals are seen as justified in having power over others **[1 mark]** ☐

(ii) An individual with a belief in absolute obedience, submission to authority and domination of minorities **[1 mark]** ☐

(iii) Acting as a representative of another person who is therefore seen as responsible for the behaviour demonstrated **[1 mark]** ☐

(iv) Features of an environment that can affect individuals' level of compliance to authority figures **[1 mark]** ☐

2 Discuss two explanations for obedience. **[16 marks]**

3 Outline and evaluate situational variables affecting obedience. **[12 marks]**

4 Outline and evaluate the findings and conclusions of one study of obedience. **[6 marks]**

5 Explain how proximity and location can affect obedience. **[2 + 2 marks]**

6 Yolanda dropped a crisp packet in the shopping centre and when told to pick it up by a fellow shopper she did nothing, but when told to do so by a security guard she immediately complied.

With reference to the passage above, explain why Yolanda obeyed the security guard, but not the fellow shopper. **[3 marks]**

7 Below is a table of data relating to the number of people who gave up a train seat when ordered to by a person dressing in different clothes:

	Number of people (out of 20) who obeyed an order to give up a train seat
Order issued by person in track-suit	3
Order issued by person in casual clothes	5
Order issued by person in train company uniform	16

(i) Calculate the mean number of people who obeyed the order to give up their seat across all three conditions. Show your calculations. **[2 marks]**

(ii) What would be an appropriate graph to plot the data? Explain why. **[3 marks]**

(iii) The study used an independent groups design. Give one advantage and one disadvantage of this design. **[2 + 2 marks]**

1.9 Explanations of resistance to social influence

'Whenever you find yourself on the side of the majority, it is time to pause and reflect.'

Mark Twain

'It is necessary to distinguish between the virtue and the vice of obedience.'

Lemuel K. Washburn

Although social influence generally helps society to function in an effective way, sometimes the consequences of conformity and obedience can be very negative. The crash of Northwest Airlink Flight 5719 (see 'In the News', page 26) is but one example of such negative consequences. If strategies are to be constructed that help prevent such destructive types of conformity and obedience, a thorough understanding of how social influence can be resisted is required. This suggests that possibly the best way to resist the negative effects of social influence is to train staff in institutional settings, where there is generally a social expectancy of conformity and obedience, to conform to and obey official guidelines and rules, rather than malevolent authority figures and majority influences.

Resistance to social influence involves *disobedience* and *non-conformity*, with non-conformity occurring in two ways:

1 Independence – involving a lack of consistent movement either towards or away from social expectancy (doing your own thing).

2 Anti-conformity – involving a consistent movement *away* from social conformity, for instance adopting the behaviour and norms of a minority group.

KEY TERMS

Resistance to social influence – the ways in which individuals attempt to withstand perceived attempts to threaten freedom of choice

Social support – the perception of assistance and solidarity available from others

Social support

Research suggests that when there are others in social situations who defy attempts to make them conform and obey, then it becomes much easier for an individual to also resist such forms of social influence.

Conformity

With conformity, the presence of others who *dissent* has proven to be a strong source of defiance. In a variation of Asch's study (see page 6), if the naïve (real) participants saw a dissenter disagreeing with the majority wrong answer on critical trials, conformity dropped sharply. Dissenters provide the participant with moral support, even if they give a different wrong answer from the majority, 'freeing' the participant to give the correct answer. The dissenter represents a form of **social support**. So, a major way of resisting conformity is to break the agreement of the majority – if they do not all agree, their impact is greatly reduced.

It also seems that early social support is more influential; if an individual finds themself in a situation in which pressures towards conformity are increasing and they feel they should be resisted, they should try to speak out as soon as possible. The sooner they do, the greater their chances of rallying others and resisting the majority.

Figure 1.35 Even dissenters with apparently poor vision reduced conformity in Asch's study

Research

Allen & Levine (1971) found that conformity was reduced on a task involving visual judgements if there was a dissenter, even if the dissenting 'partner' wore glasses with thick lenses and admitted to having a sight problem. This suggests dissenters help resist social influence even when dissenters are not skilled in particular situations.

Asch (1956) found that if there is a dissenter who answers correctly from the start of the study, conformity drops from 32 per cent to 5.5 per cent, but if the confederate only starts to dissent later in the study, conformity only drops to 8.5 per cent. This suggests that social support received earlier is more effective than support received later.

Obedience

With obedience the presence of *disobedient models* has been shown to be a powerful source of social support. Similarly to dissenters with conformity, disobedient models reduce the unanimity of a group, making it easier for individuals to act independently. Such people also seem to demonstrate that disobedience is actually possible, as well as how to do it. In one of Milgram's variations, after confederate teachers had refused to obey, a real participant commented 'I didn't realise I could refuse to obey'. Disobedient models can additionally be seen as a form of conformity, as they create a group norm for individuals to follow suit.

Research

Milgram (1974) found that when two confederates paired with the real participant left the study early on, declaring that they would go no further, only 10 per cent of participants gave the maximum 450-volt shock. This suggests that the creating of a group norm of disobedience put the participants under pressure to conform to the behaviour of the confederates.

Mullen *et al.* (1990) found that when disobedient models broke the law by jay-walking (crossing roads illegally), participants were more likely to jay-walk themselves than when disobedient models weren't present, supporting the idea of disobedient models increasing resistance to social influence.

YOU ARE THE RESEARCHER

Would a dissenter who you identify with create more resistance to conformity than one you don't identify with? Design an Asch-type procedure where, in the experimental condition, all the confederates are wearing replica shirts of a football team different to the one the real participant supports, but with the dissenter wearing a replica shirt of the same team the real participant supports. What would the control condition be? What type of experimental design would be used? What would the IV and DV be? What would your experimental hypothesis be? Why would a non-directional (two-tailed) hypothesis be justifiable?

For more on research methods, see Chapter 7.

Figure 1.36 Would a dissenter who supported the same team as you make you more resistant to social influence?

Locus of control

Locus of control (LoC) was identified as a personality dimension by Rotter (1966). It concerns the extent to which people perceive themselves as being in control of their own lives. Individuals with a high internal LoC believe they can affect the outcomes of situations. Individuals with a high external LoC believe things turn out a certain way regardless of their actions.

Internal LoC refers to the belief that things happen as a result of an individual's choices and decisions, while external LoC refers to the belief that things happen as a result of luck, fate or other uncontrollable external forces. Rotter (1966) believed that having an internal LoC makes individuals more resistant to social pressure, with those seeing themselves in control of a situation more likely to perceive themselves as having a free choice to conform or obey.

KEY TERM

Locus of control (LoC) – the extent to which individuals believe that they can control events in their lives

Research into LoC and resisting conformity

Spector (1983) gave Rotter's locus of control scale to 157 university students and found that participants with a high external locus of control did conform more than those with a low external locus of control, but only in situations that produced normative social pressure. Both types of participants did not conform in situations that produced informational social influence. This suggests that people with less of a need for acceptance into a social group will be more able to resist social influence.

Shute (1975) exposed undergraduates to peers who expressed either conservative or liberal attitudes to drug taking. He found that undergraduates with an internal LoC conformed less to expressing pro-drug attitudes, supporting the idea that having an internal LoC increases resistance to conformity.

Avtgis (1998) performed a meta-analysis of studies involving LoC and conformity, finding that individuals with an internal locus of control were less easily persuadable and less likely to conform, supporting the idea of differences in LoC being linked to differences in the ability to resist social influence.

Research into LoC and resisting obedience

Holland (1967) tested for a link between LoC and obedience, but found no relationship between the two. However, Blass (1991) reanalysed Holland's data using more precise statistical analysis and found that participants with an internal LoC were more able to resist obedience than those with an external LoC. Those with an internal LoC were especially resistant if they thought the researcher was trying to force or manipulate them to obey. This suggests the aspect of personal control in a situation is important, as those with a high internal LoC like to feel they have choice over their behaviour.

Schurz (1985) found no relationship between LoC and obedience among Austrian participants, who gave the highest level of what they believed to be painful, skin-damaging bursts of ultrasound to a learner. However, participants with an internal LoC tended to take more responsibility for their actions than those with an external LoC, which again suggests that feelings of personal control may be related to resistance of social influence.

Jones & Kavanagh (1996) investigated the link between moral disengagement and individual differences in LoC. They found that those with a high external LoC were more likely to obey unethical authority

figures. This is a possible explanation for corporate fraud and institutional abuses of power where junior staff members fail to resist immoral/criminal directives given to them by more senior managers.

ON THE WEB

Listen to a BBC Radio 4 programme on Julian Rotter's Locus of Control, which was part of the *Mind Changers* series:

www.bbc.co.uk/programmes/b01gf5sr

To measure your own LoC go to:

www.psych.uncc.edu/pagoolka/LocusofControl-intro.html

YOU ARE THE RESEARCHER

Design a correlational study to examine the relationship between LoC and degree of independent behaviour. You will need to measure participants' LoC. (Use the link in the 'On the web' feature on the left). You then need to measure participants' levels of conformity/obedience. Think about how this has been done in studies you have already studied. Plot your data on a scattergram to give an indication of the strength and direction of correlation.

For more on research methods, see Chapter 7.

KEY TERMS

Reactance – rebellious anger produced by attempts to restrict freedom of choice

Ironic deviance – the belief that other people's behaviour occurs because they have been told to do it lowers their informational influence

Status – an individual's social position within a hierarchical group

INCREASE YOUR KNOWLEDGE

Other factors involved in the resistance of conformity

Reactance

When the freedom of choice of individuals is restricted, they may react with **reactance** (rebellious anger), such as when adolescents rebel against conforming to adult rules.

Figure 1.37 Those in high reactance conditions are more likely to smoke

Hamilton (2005) found that Australian adolescents in a low-reactance condition, who were told it was normal to experiment with cigarettes as long as they were aware of health risks, were less likely to smoke than those in a high-reactance condition who were told to never smoke. This implies that when freedom of choice is threatened, resistance will occur (it could be argued to be obedience as well as conformity).

Ironic deviance

If the truthfulness of a source of informational social influence is doubted, then the chances of individuals conforming to the guidance given will be lessened.

Conway & Schaller (2005) found that office workers conformed and used a software product if other employees recommended it, but were less likely to conform if the colleagues had recommended it after being ordered by the office manager to use that particular software, rather than alternatives. In this instance, they attributed fellow office workers' behaviour as being determined by the boss's order. This supports the idea that if individuals believe a source of informational influence is not genuine, conformity to that influence will be resisted (**ironic deviance**).

Status

People of low **status** within a group, such as newcomers, are motivated to attain higher status by exhibiting conformist behaviour; therefore conformity is more able to be resisted if individuals perceive themselves as of higher status within a group. (See Contemporary research – Richardson, 2009, on page 37.)

ON THE WEB

Read the full research paper of Lucian Conway & Mark Schaller on ironic deviance in conformity behaviour, including a review of similar research, at:

www2.psych.ubc.ca/~schaller/ConwaySchaller2005.pdf

CONTEMPORARY RESEARCH

Distinction defeats group member deviance. The unlikely relationship between differentiation and newcomer conformity – Erika Richardson (2009)

Status affects conformist behaviour, as people of lower status within a group are motivated to attain higher status by exhibiting conformist behaviour, while those who see themselves as of higher relative status will be more able to resist conformity.

Figure 1.38 Would low-status participants conform to poor investment advice from high-status people?

Aims

- To test the effects of information on newcomers' willingness to agree to group decisions.
- To assess how the status of individuals affects attempts to make them conform to obviously wrong answers.

Procedure

1 84 male and female students were assigned randomly to same-sex groups comprising three people. Two of each group were confederates and one was a naïve (real) participant. The naïve participants were led to believe that they were newcomers to the teams. Within each team the group members introduced themselves, with the confederates always going first. In each team the confederates described biographical details (level of education, amount of experience and so on) as of high or low status. The teams then looked at some information about two stock companies and decided which one to invest money in (one stock company was clearly superior to the other).

2 Team members gave their opinion, with the real participant always answering last. The two confederates chose the weaker of the two stock companies.

Findings

In the teams where the confederates are believed to be of high status, participants conformed to the group decision. The reverse was true where confederates were believed to be of low status.

Conclusions

People of perceived lower status conform to the decisions of those group members of perceived higher status, even when they believe those decisions are suspect, in order to attain higher status. People use competence-based clues about the status of other group members to determine the level of their conformist behaviour. People of higher perceived status within a group are more able to resist attempts to make them conform.

Evaluation

The research has practical applications for the formation of groups. New group members should not be made to feel inferior, if they are to give honest opinions and be able to resist attempts to conform to obviously wrong/poor decisions.

The implication is that bad decisions made by people of high status are given additional support by the conformity to such decisions of junior group members. This is, therefore, similar to the findings of Tarnow (2000, see page 26) that aircraft accidents are often caused by junior co-pilots not questioning the wrong decisions of higher-status pilots.

The study is unethical, as it involved deceit. The confederates were not who they claimed to be; therefore informed consent could not be given.

PSYCHOLOGY IN THE REAL WORLD

Corporate fraud involves large commercial institutions performing illegal activities, such as paying bribes to get contracts and money laundering (disguising the proceeds of crime so that money cannot be traced to any wrongdoing). For example, the bank HSBC was fined £1.2 billion in 2012 for money laundering drug money in Mexico. There are also institutional abuses, where large organisations cover up evidence of their failures. The Healthcare Commission reported in 2009 that up to 1,200 'excess' deaths had been uncovered at Stafford hospital. Such frauds and abuses involve large groups of people working together within hierarchical structures. Evidence suggests that such frauds are possible where lower-status staff have external LoC, increasing the possibility of them complying with illegal orders given by authority figures within the hierarchy. Also, Chui (2004) suggests that 'whistle-blowing' – where individuals within a hierarchy report illegal activities at the risk of losing their jobs – is performed by individuals with high internal LoC. To prevent such incidents of fraud and abuses occurring again would require staff training that focuses on the recognition and resistance of such practices. Junior staff would need to be taught to obey official procedures, rather than the illegal demands of more senior authority figures.

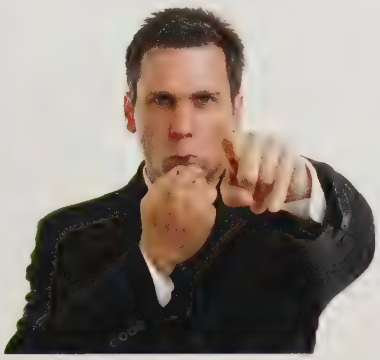


Figure 1.39 Whistle-blowers who report illegal activities within institutions tend to have a high internal LoC

RESEARCH IN FOCUS

1. Holland (1967) performed a correlational study that examined the relationship between LoC and obedience. What were the two co-variables in this study?
2. In Hamilton's (2005) study into reactance, what were the IV and DV?
3. How can Richardson's (2009) study into status be considered unethical? How would these ethical issues be dealt with?
4. Richardson used a mixed gender sample. In what way is this an advantage?
5. Richardson randomly assigned participants to teams within her study. Does this guarantee a representative sample?

For information on research methods, see Chapter 7.

Other factors involved in the resistance of obedience

Systematic processing

Individuals are less likely to obey orders that have negative outcomes if they are given time to consider the consequences of what they have been ordered to do. However, the expectation in many institutional settings, such as the military, is that orders should be complied with immediately without thought; indeed much basic training in the military is concerned with achieving such a mindset, as conflict situations would generally require immediate obedience.

Research

Martin *et al.* (2007) found that when participants were encouraged and allowed to consider the content of an unreasonable order, they were less likely to obey, demonstrating the power of **systematic processing** in resisting social influence.

Taylor *et al.* (1997) reported that disobedience increases when people are encouraged to question the motives of the authority figure issuing an order.

KEY TERM

Systematic processing – analysis based upon critical thinking

This suggests that systematic processing helps resist obedience by lessening the legitimacy of authority figures.

Morality

Research has shown that individuals who make decisions on whether to obey or not based on moral considerations are more resistant to obedience than those who do not.

Research

Milgram (1974) reported that one participant who did not fully obey, stated in a post-study interview that he was a vicar and his disobedience had been based on his 'obeying a higher authority' (God). In other words, his religious **morality** had helped him resist the authority figure's commands to deliver the electric shocks.

Kohlberg (1969) gave moral dilemmas (a choice between two alternatives involving a moral decision, e.g. whether to keep or hand in money found on the street to the police) to participants from the Milgram study, finding that those who based decisions on moral principles were less obedient, supporting the idea that morality can be used to resist social influence.

Personality

Although there is little evidence to support the idea of there being **personality** characteristics which help resist social influence, research does suggest that individuals who can empathise with the feelings of others are more able to resist orders with destructive consequences.

Research

Oliner & Oliner (1988) compared a sample of 406 people who had sheltered Jews in Nazi Europe to a sample of 126 people who had also lived through the war, but hadn't sheltered Jews. It was found that those who rescued Jews reported an upbringing that stressed social norms of helping others and emphasised their empathy with the suffering of Jewish people. As sheltering Jews was against the law in Nazi-occupied countries, it illustrates the importance of empathy as a personality characteristic which helps resist destructive obedience.

KEY TERMS

Morality – decisions and behaviour based upon the perception of proper conduct

Personality – the combination of characteristics that forms an individual's distinctive nature

STRENGTHEN YOUR LEARNING

1. What is meant by resistance to social influence?
2. How do dissenters help reduce the likelihood of conformity?
3. How do disobedient models aid resistance to obedience?
4. What is meant by locus of control?
5. What is the difference between those with an internal LoC and those with an external LoC?
6. Why are individuals with an internal LoC more resistant to social pressure?
7. Does research support the idea of a link between LoC and likelihood of conformity/obedience?
8. Explain how the following can affect resistance to conformity:
   (i) reactance
   (ii) ironic deviance
   (iii) status.
9. Explain how the following can affect resistance to obedience:
   (i) systematic processing
   (ii) morality
   (iii) personality.

ASSESSMENT CHECK

1 Copy and complete the table below by writing which description, A, B, C or D, describes which term. One statement will be left over. **[3 marks]**

A Rebellious anger produced by attempts to restrict freedom of choice

B An individual's beliefs about the causes of successes and failures

C The ways in which individuals attempt to withstand perceived attempts to threaten freedom of choice

D The perception of assistance and solidarity available from others

Term	Description
Social support	
Resistance	
Locus of control	

2 Outline and evaluate two explanations of resistance to social influence. **[16 marks]**

3 Discuss social support as an explanation of resistance to social influence. **[12 marks]**

4 Explain how locus of control can affect resistance to social influence. **[3 marks]**

5 Jasper likes to wear his hat, but when getting on the bus home he noticed everyone else wearing a hat took theirs off, so he did too. The next day he was wearing his hat again and again all the other hat wearers took theirs off when getting on the bus, all except one boy in front of him, so Jasper kept his hat on too.

With reference to the passage above, use resistance to social influence to explain why Jasper took his hat off on the first day, but kept it on the following day. **[4 marks]**

6 Research into locus of control and resistance to social support often involves correlational studies.

(i) Describe the correlational study method. **[3 marks]**

(ii) Discuss one strength and one weakness of the correlational study method. **[2 + 2 marks]**

(iii) Sketch a scattergram showing a positive correlation between internal locus of control and resistance to social influence. **[2 marks]**

1.10 Minority influence

'Minorities are the stars of the firmament; majorities, the darkness in which they float.'

Martin H. Fischer

Minority influence is a type of social influence that motivates individuals to reject established majority group norms. This is achieved through the process of *conversion*, where majorities become gradually won over to a minority viewpoint. Conversion involves the new belief/behaviour being accepted both publicly and privately and can be seen as a type of internalisation (see page 3), as it involves a change in an individual's belief system and as such is regarded as a strong (true) form of conformity.

Conversion through minority influence generally occurs through informational social influence (see page 4), where a minority provide new information and ideas to the majority. Minority influence therefore takes longer to achieve than majority influence based on compliance, where conformity is instantaneous and unthinking, because time will need to be taken for individuals to re-examine their beliefs and behaviour in light of the new information and beliefs that the minority are advocating.

The gradual process by which minority opinions become majority ones is called *social cryptoamnesia* (the 'snowball effect'). At first, converts to the minority viewpoint are few, but as more and more people change their attitude, the pace picks up and the minority gains status, power and acceptability.

Minority influence is a crucial factor in bringing about innovation and social change (see page 45) and research has suggested that behavioural style, especially **consistency** and **commitment**, as well as **flexibility**, are important factors in helping achieve minority influence.

KEY TERM

Minority influence – a type of social influence that motivates individuals to reject established majority group norms

Consistency – the idea that the more unchanging a minority is in its viewpoint, the more persuasive it will be in changing majority opinion

Commitment – the extent to which a minority group showing dedication to their opinion affects individuals' level of agreement with that opinion

Flexibility – the extent to which a minority group being prepared to slightly alter their opinion affects individuals' level of agreement with that opinion

Behavioural style – consistency and commitment

Minority influence will be persuasive if the minority is *consistent* (unchanging) with its opinion/behaviour, shows confidence in its beliefs, and appears unbiased. Consistency seems to be the most important feature here, as it shows the minority are committed, especially if the minority have had to resist social pressures and abuses against their viewpoint, and creates enough doubt about established norms to get individuals to re-examine their own beliefs and behaviour.

CLASSIC RESEARCH

Influence of a consistent minority on the responses of a majority in a colour perception test – Serge Moscovici *et al.* (1969)

Srul Hersh (Serge) Moscovici claimed that if majority influence was all-powerful, we would all think and behave the same. He pointed out that major social movements, like Christianity, start with an individual or small group and that without such influences, there would be no innovation in society. He set out to investigate this claim.

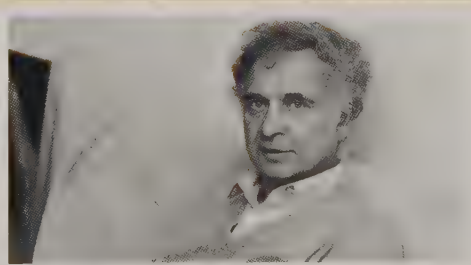


Figure 1.40 Serge Moscovici

Aim

To investigate the role of a consistent minority upon the opinions of a majority in an unambiguous situation.

Procedure

Participants were placed into 32 groups of six. In each group there were four real participants and two confederates. Participants were told that it was an investigation into perception. Each group was shown 36 blue slides, with filters varying the intensity of the colour. In the consistent condition, the confederates answered wrongly that the slides were green. In the inconsistent condition, the confederates said that 24 of the slides were green and 12 were blue. Answers were given verbally in the presence of the rest of the group.

Findings

There was an 8.2 per cent agreement with the minority in the consistent condition, with 32 per cent agreeing at least once. There was only 1.25 per cent agreement in the inconsistent condition.

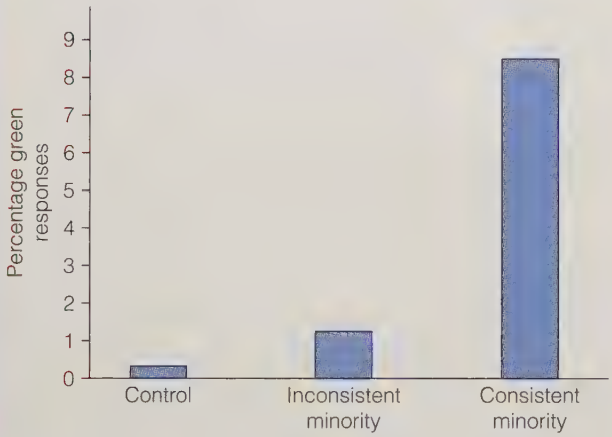


Figure 1.41 Bar chart showing conformity to inconsistent and consistent minority influence

Conclusions

Although the consistent condition finding of 8.2 per cent seems a small figure, it is significantly higher than the inconsistent condition figure of 1.25 per cent and so shows that although minority influence is relatively small, consistency is the important variable.

Evaluation

Consistent minorities have even greater influence on private attitudes. In a separate experiment where participants gave their answers *privately* in another consistent condition, there was even greater agreement.

Moscovici only used female participants as he thought that they would be more interested in colours – the results are not, therefore, generalisable to males. Indeed, research often suggests that females conform more readily than males (see pages 10–11).

Moscovici's study is unethical as it involved deceit, which means informed consent could not be given. Participants may also have endured mild stress.

The study does not identify important factors in minority influence, like group size, status or degree of organisation.

Research studies generally support Moscovici's findings. Meyers *et al.* (2000) found minority groups that were successful in affecting majorities were more consistent than those that were not.

ON THE WEB

Moscovici (1925–2014) was a Romanian-born French social psychologist, with an event-filled, inspirational life. His experience of totalitarian governments, with their negative attitudes towards social change and innovation, inspired him to research minority influence. Read more about him at:

http://en.wikipedia.org/wiki/Serge_Moscovici

Flexibility

Consistent minorities who are inflexible, rigid and uncompromising in their beliefs and behaviour will not be persuasive. If they are seen to be *flexible* by demonstrating an ability to be moderate, co-operative and reasonable, then they will be persuasive. Successful minority influence therefore seems to require the minority to compromise and be slightly inconsistent in its position.

Research

Nemeth (1986) created groups of three participants and one confederate who had to decide how much compensation to pay to the victim of a ski-lift accident. When the confederate, acting as a consistent minority, argued for a low amount and refused to change his position, he had no effect on the majority. However, when he compromised a little and moved to offering a slightly higher amount, the majority changed

their opinion to a lower amount. This shows how minorities need to be flexible to be persuasive, while at the same time questions the importance of consistency. This was further supported by Mugny & Papastamou (1982), who got participants to respond to questions about responsibility for pollution. They were also exposed to a minority's extreme views on how to control pollution. When the minority refused to budge from their opinion they were not persuasive; however, when they appeared flexible by compromising, they were seen as less extreme, co-operative and reasonable and were more persuasive in changing majority opinions. This suggests that flexibility may be a more important factor than consistency in enabling minority groups to be persuasive.

INCREASE YOUR KNOWLEDGE

Two other factors that are important in achieving minority influence are *style of thinking* and *identification*.

Style of thinking

A committed minority stands an increased chance of getting individuals to engage in *systematic processing*, where the minority viewpoint is considered carefully and over time, rather than being instantly dismissed without any considered analysis through *superficial processing*.

Smith *et al.* (1996) found that if a minority could get a majority to consider an issue in terms of the arguments for and against the issue, then the minority became more influential, illustrating how style of thinking is important in determining the persuasiveness of a minority. This was further supported by Nemeth (2005), who reported that when a minority can get a majority to discuss and debate an issue, the persuasive influence of the minority becomes greater.

Identification

When a majority identifies with a minority, then the minority will be more persuasive in getting the majority to convert to its viewpoint.

Maas *et al.* (1982) found that a homosexual minority arguing for homosexual rights was less persuasive in changing majority heterosexual opinions than a heterosexual minority arguing for homosexual rights. This suggests that the heterosexual majority identified with the heterosexual minority, making them more persuasive, while they perceived the homosexual minority as different from themselves and as having a self-interest in promoting their own particular cause.

ON THE WEB

Charlan Nemeth is one of the foremost researchers into minority influence. Go to:

https://irle.berkeley.edu/files/2010/Minority-Influence-Theory.pdf

Here you can read a fascinating recent paper by her concerning the history of minority influence research, including details of her work with Serge Moscovici, and the importance of dissenters as a source of minority influence that encourages divergent thinking, leading to innovation and creativity.

STRENGTHEN YOUR LEARNING

1. Why might minority influence be regarded as a form of internalisation?
2. Why does minority influence take longer to achieve than majority influence?
3. What is social cryptoamnesia (the 'snowball effect')?
4. Explain how the following are important in making a minority persuasive:
   - (i) behavioural style
   - (ii) flexibility
   - (iii) style of thinking
   - (iv) identification.
5. What did Moscovici's study suggest is the most important factor in minority influence? Justify your answer.

RESEARCH IN FOCUS

For more on research methods, see Chapter 7.

1 Moscovici's study can be said to lack mundane realism. What does this mean?
2 Identify two other methodological weaknesses of Moscovici's study.
3 Does Moscovici's study have any ethical issues? Give details.
4 The presentation of data for Moscovici's study (see page 42) is in the form of a bar chart. Explain:
   (i) why this is an appropriate graph for this data
   (ii) how a bar chart differs from a histogram
   (iii) how the data could be displayed in a pie chart.

IN THE NEWS

Ψ The Psychological Enquirer

Police investigate assisted suicide of paralysed rugby player

Figure 1.42 As with other contact sports, rugby carries a certain risk of injury

Daniel James, a 23-year-old England rugby player, committed suicide in a Swiss euthanasia clinic after being paralysed from the chest down in a training accident. Police investigated but no one was prosecuted.

Daniel, a hooker with Nuneaton rugby club, felt his body had become a 'prison' and lived in 'fear and loathing' of daily life. He tried to kill himself several times after a scrum collapsed on him in March last year, dislocating his neck vertebrae, trapping his spinal cord and rendering him instantly tetraplegic.

Assisted suicide is illegal in the UK and family or friends who help face up to 14 years in jail.

Dignity in Dying, which campaigns for a law change to allow terminally ill and mentally competent patients to choose assisted death, has supported several cases similar to Daniel's.

Dignity in Dying can be regarded as a minority group influence. Their argument that individuals should have the right to choose assisted suicide is not a mainstream one and has attracted criticism and even legal action. Increasingly, however, people are coming round to their viewpoint. Perhaps in a few years' time their view will be the majority one and euthanasia will be an accepted practice. If so, this would be an example of how minority influence leads to social change. In 2014 the Assisted Dying Bill was debated in Parliament, with Dignity in Dying one of the official stakeholder groups. However, the bill did not at this time become law.

1.11 The role of social influence processes in social change

'Do not follow where the path may lead. Go, instead, where there is no path and leave a trail.'
Ralph Waldo Emerson (1893)

'I can't understand why people are frightened of new ideas. I'm frightened of the old ones.'
John Cage (1988)

Social change

Social change involves the way in which society develops, through big shifts in people's beliefs, attitudes and behaviour. This process occurs continually, but at a gradual pace, with minority influence being the main driving force for social change through minority viewpoints slowly winning the majority over to what will become new social norms (expected ways of thinking and behaving).

Social change can be positive, such as the increased rights for women that developed in western cultures through the 1900s, but social change can also be negative, such as the adoption by society of eugenic beliefs, which saw people of different races as genetically inferior, leading to mass extermination of whole groups of people, such as that performed by the Nazis.

Majority influence's main role is to help maintain social order, to keep things the way they are. Majority influence can therefore be seen as a 'police officer' overseeing society, so that people know what behaviour and attitudes are expected of them and then stick to them. Majority influence is also more of an immediate, unthinking process and so can be broken down over time through minority influence affecting people's thought processes and belief systems to bring about social change.

Minority influence changes attitudes and behaviour over time, incurring a strong, long-lasting form of conformity, involving fundamental changes in belief systems (see Minority influence, page 41). This occurs by individuals directing their thinking at understanding why the minority holds a particular viewpiont. And conversion to the minority viewpoint then takes place, as individuals start to look at the issue in the same way as the minority. In this way innovation occurs and new ideas and behaviours become adopted as mainstream practices.

There comes during this process a moment of critical mass, where the minority viewpoint becomes that of the mainstream and the majority will begin to conform to this new viewpoint through compliance (see page 3). However, as this is only a public, but not private form of majority influence, people may still privately hold their original beliefs: for example, still privately holding sexist or racist beliefs, but not publically demonstrating them. For more permanent social change to occur, more people will need to conform to the new viewpoint through internalisation involving a change in their belief systems (see page 3).

KEY TERMS

Social influence processes – the means by which society changes beliefs, attitudes and behaviour to create new social norms (expected ways of behaviour and thinking)

Social change – the alteration of behaviour patterns and attitudes within a cultural grouping

Figure 1.43 Environmentalists are now the majority

As social change is generally a slow, gradual process of social cryptoamnesia (see page 41), it allows for change to occur in a manner that is not too disruptive to social order; rapid change would cause conflict within society that could be very harmful in the short term. The slowness of the process also allows for new ideas to be 'road-tested', to check their suitability for mainstream society. Once social change has occurred, conformity will serve to consolidate and maintain the new beliefs and behaviour, as part of a new social order.

Like conformity, obedience generally serves to maintain the existing social order. Therefore, as social change occurs, obedience (like conformity), will serve to oversee and uphold the new social order.

There is always the possibility that people who show resistance to conformity and obedience may become agents for social change, as they model the attitudes and behaviour necessary for such change to occur.

A good example of how social influence processes bring about social change would be that of the environmental group Greenpeace, which started in Canada in the early 1970s. Originally regarded as a bunch of cranks attracting ridicule and legal action, they slowly over time – through minority influence – changed more and more people's belief systems and so attracted more members and popular support, until finally becoming the mainstream, accepted, legitimate voice for environmental issues.

CONTEMPORARY RESEARCH

Resistance to persuasive messages as a function of majority and minority status – Martin, Hewstone & Martin (2003)

Figure 1.44 Would an argument against voluntary euthanasia be more resistant to change if supported by a minority or a majority group?

Aim

To see if opinions given by minority or majority group influence are more resistant to conflicting opinions.

Procedure

48 British university student participants who had an initial attitude of being supportive of voluntary euthanasia received two messages. The first message (the pro-attitudinal message) gave six arguments against voluntary euthanasia and was supported by either minority or majority group influence. The second message (counter-attitudinal message) conflicted with the first message by giving six arguments for voluntary euthanasia. Attitudes were measured after the presentation of both messages.

Findings

Attitudes following minority support for the pro-attitudinal message were more resistant to change following the counter-attitudinal message, than if the pro-attitudinal message had been given majority support.

Conclusions

Minority influence creates systematic processing (consideration) of its viewpoints, leading to attitudes that are resistant to counter-persuasion. The findings support Moscovici's belief that the opinions of minorities are subjected to a higher level of processing than those of majorities.

Evaluation

The results are consistent with the view that both majorities and minorities can lead to different processes and consequences under different situations. Minority influences have a much greater influence than was originally thought.

The results support the idea that minority influence can lead to social change, as systematic processing will cause changes in belief systems leading to fundamental changes in people's viewpoints and behaviour.

Research

Martin & Hewstone (1999) found that minority influence leads to more creative and novel judgements than majority influence, supporting the idea of minority influence being a social force for innovation and change.

Burgoon (1995) argued that it is the deviant and unexpected behaviours of minorities that are alerting and arousing and which lead to a deeper-level analysis of the behaviour and ideas being presented. This suggests it is the violation of social norms by minorities which leads to systematic processing and, ultimately, social change.

Nemeth (2009) reported that it is the 'dissent' of minorities to established social norms that 'opens' individuals' minds to search for information, consider other options and ultimately become more creative and make better decisions. This illustrates how it is the resistance of minorities to conform to and obey social norms that acts as a catalyst (starting point) for social change.

STRENGTHEN YOUR LEARNING

1 What is meant by social change?
2 Explain how minority influence may bring about innovation.
3 Minority influence generally allows social change to occur in a slow, gradual fashion. How might this be a good thing?
4 Give a real-life example of your own of a minority group that has brought about social change. Using what you have learned about minority influence, explain how this social change occurred.

RESEARCH IN FOCUS

1 The aim of Martin, Hewstone & Martin's (2003) experiment was to see if opinions given by minority or majority group influence are more resistant to conflicting opinions. Explain how an aim differs from a hypothesis.
2 For Martin, Hewstone & Martin's study, construct a suitable:
   (i) non-directional hypothesis
   (ii) directional hypothesis
   (iii) null hypothesis.
3 Martin, Hewstone & Martin's study used an opportunity sample. What is meant by an opportunity sample? Give one strength and one weakness of this sampling method.

For information on research methods, see Chapter 7.

PSYCHOLOGY IN THE REAL WORLD

Research into minority influence and innovative change has had a big impact in the world of business and industry, where it has been realised that conformity and obedience within hierarchical social groups decrease the chances of beneficial change occurring. Companies that just place 'yes men' into work teams, individuals who quietly conform to usual practices and obey without question the directives of managers, will not experience any healthy dissent leading to meaningful analysis of work practices and ultimately beneficial innovation. More successful companies have used psychological knowledge and introduced minorities of genuine dissenters into teams to create an atmosphere of innovative social change.

Figure 1.45 Introducing dissenters into teams as a source of minority influence is an effective way of achieving innovation

ASSESSMENT CHECK

1 Which of the following terms best matches the descriptions below relating to minority influence? Choose one term that matches each description and write either A, B, C or D in the box next to it. Use each letter once only. One term will be left over.

A Flexibility

B Compliance

C Consistency

D Commitment

(i) Minorities who demonstrate an ability to be moderate, co-operative and reasonable **[1 mark]** ☐

(ii) Minorities who demonstrate resistance of social pressures and abuses against their viewpoint **[1 mark]** ☐

(iii) Minorities who are unchanging in their opinions and behaviour. **[1 mark]** ☐

2 Discuss the role of social influence processes in social change. **[16 marks]**

3 Outline and evaluate minority influence. **[12 marks]**

4 With reference to minority influence, explain each of the following:

(i) consistency **[2 marks]**

(ii) flexibility **[2 marks]**

(iii) commitment. **[2 marks]**

5 Ise and her partner have very strong views on the safety of children and they have always argued for and sent their children to school wearing high-visibility clothing. At first, their views and behaviour were ridiculed, but they stuck to it, though they compromised a bit by getting their children to just wear fluorescent jackets. Slowly, more and more parents started sending their children to school wearing high-visibility jackets, until the majority were doing so and it has even now become official school policy.

With reference to the above passage, explain how social influence processes influence social change. **[6 marks]**

6 Explain three ethical issues psychologists must consider when researching into minority influence. **[6 marks]**

SUMMARY

Conformity (majority influence)

- Conformity involves yielding to group pressure. Kelman (1958) proposed three types of conformity: compliance, identification and internalisation, which differ in the degree to which they affect belief systems.
- Conformity is regarded as a form of majority influence, with minority influence regarded as a form of internalisation.
- One explanation for conformist behaviour is informational social influence, where individuals yield to majority influence in order to be correct. This was demonstrated in Jenness' (1932) study.
- A second explanation for conformist behaviour is normative social influence, where individuals yield to majority influence to be accepted/avoid rejection. This was demonstrated in Asch's (1955) study.
- Another explanation of conformist behaviour is cognitive dissonance, where conformist behaviour reduces the unpleasant feelings created by simultaneously holding two contradictory cognitions.
- There are several situational variables that affect rates of conformity, such as the size of the majority influence, the unanimity of the majority influence, task difficulty, group identity, whether responses are made publicly or privately, and social norms. There are also individual factors such as gender, mood, personality and culture.
- Social roles are the parts individuals play as members of a social group, which meet the expectations of a situation.
- Zimbardo found that individuals conform readily to the social roles demanded of a situation in his prison simulation study.

Obedience and the work of Milgram

- Obedience involves complying with the demands of an authority figure and Milgram's study identified several explanations for obedience, such as agentic state, legitimacy of authority and dehumanisation.
- Milgram also identified several important situational variations such as proximity, location and uniform.
- The authoritarian personality is a dispositional explanation of obedience that seeks to identify personality characteristics associated with obedience.

Resistance to social influence

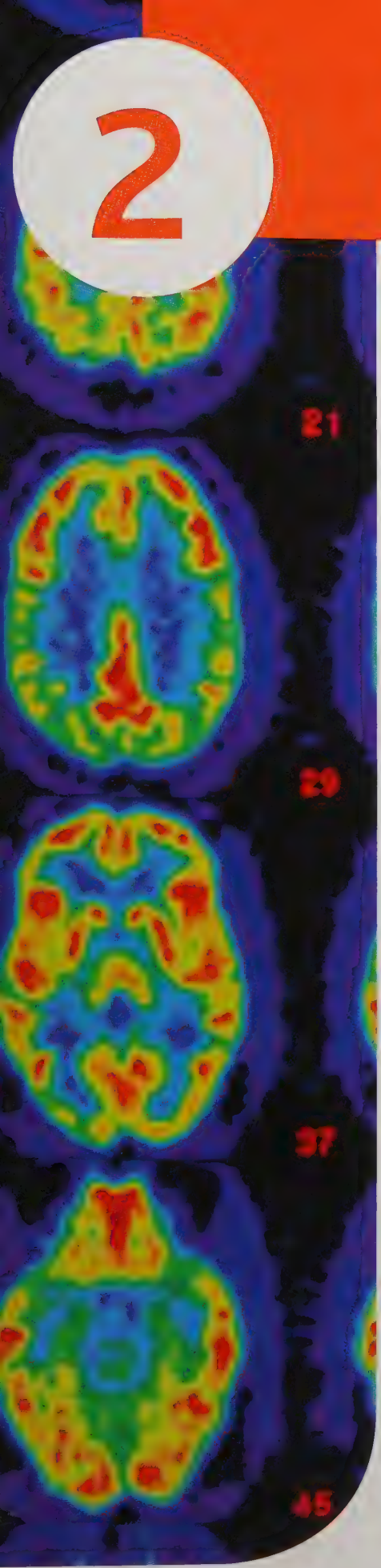
- Resistance to social influence involves the ways in which individuals attempt to withstand perceived attempts to threaten their freedom of choice and is influenced by factors such as social support and locus of control.
- Resistance to conformity is additionally affected by reactance, ironic deviance and status, while resistance to obedience is affected by systematic processing, morality and personality.

Minority influence

- Minority influence is a type of social influence that motivates individuals to reject established majority group norms through the process of conversion, where majorities become gradually won over to a minority viewpoint.

- Important factors in the persuasiveness of minority influence are behavioural style, especially consistency and commitment, as well as flexibility, style of thinking and identification.
- Social change concerns the process by which society changes its beliefs, attitudes and behaviour to create new social norms, with minority influence as the main driving force.
- Minority influence allows innovation to occur, where new ideas and behaviours become adopted as mainstream practices.
- Minority influence provides the catalyst for social change, while majority influence and obedience reinforce existing social norms.

2 Cognitive psychology: memory



Introduction

Cognitive psychology concerns mental processes. The main emphasis is on information processing, with humans seen as taking in and analysing sensory information to initiate and monitor behaviour. The mental process featured here is **memory**, the retention of experience. Specific focus will be upon:

- Explanations of memory (the multi-store and working models)
- Different types of long-term memory
- Explanations for forgetting
- Factors affecting the accuracy of eyewitness testimony
- Strategies to improve memory recall.

Understanding the specification

- Both *the multi-store model and the working memory models of memory* must be covered, as they are referred to directly in the specification.
- *Semantic, episodic and procedural types of long-term memory* must also be studied.
- *Interference and retrieval-cue failure* are explanations for forgetting which must be learned, as they are explicitly named in the specification.
- *Eyewitness testimony* is to be covered in two ways. Firstly, through factors that affect it, including anxiety, leading questions and post-event discussion as types of misleading information. Secondly, through strategies to improve the accuracy of eyewitness testimony, including the cognitive interview.

These are the basic requirements of the specification. However, other relevant material is included to provide depth and detail to your understanding.

'Time moves in one direction, memory in another.'
William Gibson (2012)

'Memory is a net that one finds full of fish when it's taken from the brook, but a dozen miles of water have run through it without sticking.'
Oliver Wendell Holmes, Senior (1860)

IN THE NEWS

Ψ The Psychological Enquirer

The man who forgot everything, but not how to love

Figure 2.1 Scott Bolzan and wife Joan

Forty-six-year old Scott Bolzan had played American football for the New England Patriots and the Cleveland Browns, before going on to run his own successful charter aeroplane business. Then, in December 2008, he slipped, banged his head and woke up blank. He didn't know his name or recognise his friends or family, or remember any past events. Scott had suffered severe retrograde amnesia, probably as he had had no blood flow to his right temporal lobe, a brain area associated with long-term memory. His memory loss was so severe that he had no understanding of concepts most people would take for granted, like the meaning of birthdays or what the relationship between a husband and a wife is. Fortunately, Scott was able to re-learn things, as his short-term memory ability was still intact, as was his ability to create new long-term memories.

Scott found it was not easy rekindling his love for his wife, a woman he no longer recognised. He had to be wooed and fall in love with her again. Eventually, they spent a night on a boat and re-started their sex life; he had retained a lot of procedural memory and 'thank goodness for that', said his wife.

Scott's case highlights how short-term and long-term memory involve different storage systems, as theorised by the multi-store model of memory. Indeed, other amnesia cases also support this explanation by showing the reverse: loss of short-term memory ability, but with long-term memories unaffected. Strangely, Scott could still understand written and spoken speech and perform old skills like riding a bicycle, which supports the idea that there are different types of long-term memory – Scott's accident hadn't affected them all.

KEY TERMS

Memory – the means by which the mind stores and retrieves information and events experienced

Multi-store model (MSM) – an explanation of memory that sees information flowing through a series of storage systems

Sensory register (SR) – a short-duration store holding impressions of information received by the senses

Short-term memory (STM) – a temporary store holding small amounts of information for brief periods

Long-term memory (LTM) – a permanent store holding limitless amounts of information for long periods

Coding – the means by which information is represented in memory

2.1 The multi-store model (MSM)

'Kiss me goodbye and make it impressive; I have issues with my short-term memory.'

Jennifer Delucy (2010)

The **multi-store model (MSM)**, devised by Atkinson & Shiffrin (1968), was the first cognitive explanation of memory; previous to the MSM, psychologists had mainly tried to study and explain memory through biological means. The model explains how information flows through a series of storage systems, with three permanent structures in memory: the **sensory register (SR)**, **short-term memory (STM)** and **long-term memory (LTM)**. Each stage differs in terms of:

- **coding** – the form in which the information is stored
- **capacity** – how much information can be stored
- **duration** – how long information can be stored for.

Information gathered by the sense organs enters the sensory register. Only the small amount paid attention to passes to short-term memory for further processing, the rest is lost very quickly. Information in short-term memory that is actively processed enough (thought about), mainly through rehearsal, transfers to long-term memory for more permanent storage.

KEY TERMS

Capacity – the amount of information that can be stored at a given time

Duration – the length of time information remains within storage

The sensory register (SR)

The SR is not under cognitive control, but is an automatic response to the reception of sensory information by the sense organs and is the first storage system within the multi-store model (MSM). All information contained within LTM will have originally passed through the SR, though in an unprocessed form.

Coding in the SR

Information is stored in a raw, unprocessed form, with separate sensory stores for different sensory inputs: the *echoic* store for auditory information, the *iconic* store for visual information, the *haptic* store for tactile information, the *gustatory* store for taste information and the *olfactory* store for smell. Information that is paid attention to passes on to the STM, while the remainder fades quickly through trace decay, leaving no lasting impression.

Research

Crowder (1993) found that the SR only retains information in the iconic store for a few milliseconds, but for two to three seconds within the echoic store, which supports the idea of sensory information being coded into different sensory stores (it also suggests they have different durations).

Evaluation

- After-images of visual events provide good evidence of sensory memories. The light trail produced by a moving lighted stick was noted as early as 1740. Such phenomena led to early experiments into the SR in the 1960s.
- Sensory memory stores may consist of several sub-stores, for example, visible persistence and informational persistence within the iconic memory store.

Capacity of the SR

The capacity of each sensory memory store is very large, with the information contained being in an unprocessed, highly detailed and ever-changing format.

Research

Sperling (1960) flashed a 3 × 4 grid of letters onto a screen for one-twentieth of a second, and asked participants to recall the letters of one row. As the information would fade very quickly, he sounded different tones (high, medium or low) to indicate which row had to be recalled (1st, 2nd or 3rd). Recall of letters in the indicated row was high, which suggests all the information was originally there, indicating that the capacity of the SR (especially for the iconic store) is quite large.

Javitt *et al.* (1996) reported a biological basis to SR capacity, as the capacity of the iconic and echoic stores was found to be related to efficiency of the nervous system, which suggests there are individual differences in SR capacity.

Figure 2.2 Example of a 3 × 4 letter grid as used by Sperling (1960)

Evaluation

Calculating the capacity of sensory memory stores often involves experiments where participants have to evaluate cues that suggest a change in random wave patterns. However, these only provide estimates of capacity and are highly artificial in nature and thus lacking in mundane realism.

Although evidence exists that the iconic store can hold about fifteen to twenty images, the capacity of other sensory memory stores isn't well studied, as they last so briefly and generally only at a pre-conscious level.

Duration of the SR

It seems that all sensory memory stores have limited duration, though the actual duration of each store is not constant, with different types of information within each store decaying at different rates. Different sensory stores appear to have different capacities and there is some evidence that duration decreases with age.

Research

Walsh & Thompson (1978) found that the iconic sensory store has an average duration of 500 milliseconds, which decreases as individuals get older. This suggests duration of sensory memories is limited and dependent on age.

Treisman (1964) presented identical auditory messages to both ears of participants, with a slight delay between presentations. Participants noticed the messages were identical if the delay was two seconds or less, suggesting the echoic store has a limited duration of two seconds, while also illustrating the difference in duration from the iconic store.

Evaluation

The brief duration of sensory memories is seen as due to their physical traces (engrams) fading quickly (see Explanations for forgetting, page 76). This suggests a biological explanation for the duration of information within the SR.

The brief duration of the SR can be understood from an evolutionary perspective, as people only need to focus on perceptual information with an immediate survival value. Retaining non-useful information diminishes the ability to do this

Short-term memory (STM)

STM temporarily stores information received from the SR. It is an active (changing) memory system, as it contains information currently being thought about. STM differs from LTM especially in terms of coding, capacity and duration and how information is forgotten (see Explanations for forgetting, page 76). There are several explanations for forgetting from STM.

Coding in STM

Information arrives from the SR in its original raw form, such as in sound or vision, and is then encoded (entered into STM) in a form STM can more easily deal with. For example, if the input into the SR was the word 'platypus', this could be coded into STM in several ways:

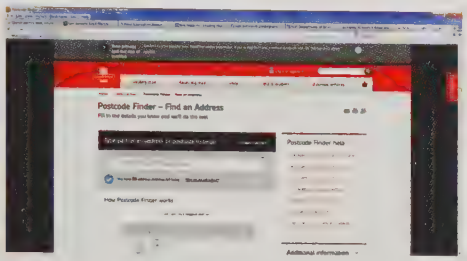
- Visually – by thinking of the image of a platypus
- Acoustically – by repeatedly saying 'platypus'

Figure 2.3 Platypuses can be encoded into STM in several ways

- Semantically – (through meaning) by using a knowledge of platypuses, such as their being venomous egg-laying aquatic marsupials that hunt prey through electrolocation.
- Research suggests that the main form of coding in STM is acoustic (by sound), but other codes exist too.

CLASSIC RESEARCH

Influence of acoustic and semantic similarities on short- and long-term memory for word sequences – Alan Baddeley (1966)



Figures 2.4 and 2.5 Professor Alan Baddeley conducted research into postcodes and memory

Professor Alan Baddeley of York University started his research into memory when he received a grant from the Post Office to test how well different sorts of postcodes could be remembered. His preferred option wasn't adopted, but he did become famous for helping develop the working memory model (1974). He also carried out lots of other memory research, including the following experiment into coding in STM and LTM.

Aim

To assess whether coding in STM and LTM is mainly acoustic (by sound) or semantic (by meaning).

Procedure

1 75 participants were presented with one of four word lists repeated four times.

List A – acoustically similar words (sounded the same as each other) ('cat', 'mat', 'sat')
List B – acoustically dissimilar words (sounded different to each other) ('pit', 'day', 'cow')
List C – semantically similar words (meant the same as each other) ('big', 'huge', 'tall')
List D – semantically dissimilar words (had different meanings to each other) ('hot', 'safe', 'foul')

2 To test coding in STM, participants were given a list containing the original words in the wrong order. Their task was to rearrange the words in the correct order.

3 The procedure for LTM was the same, but with a 20-minute interval before recall, during which participants performed another task to prevent rehearsal.

Findings

1 For STM, participants given List A (acoustically similar) performed the worst, with a recall of only 10 per cent. They confused similar-sounding words, e.g. recalling 'cap' instead of 'cat'. Recall for the other lists was comparatively good at between 60 and 80 per cent.

2 For LTM, participants with List C (semantically similar) performed the worst, with a recall of only 55 per cent. They confused similar-meaning words, e.g. recalling 'big' instead of 'huge'. Recall for the other lists was comparatively good at between 70 and 85 per cent.

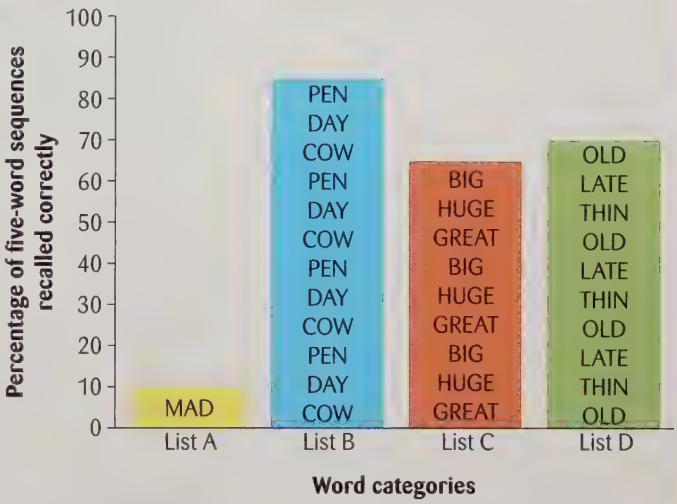


Figure 2.6 Baddeley's 1966 acoustic/semantic study findings

Conclusions

For STM, since List A was recalled the least efficiently, it seems there's acoustic confusion in STM, suggesting STM is coded on an acoustic basis.

For LTM, since List C was recalled the least efficiently, it seems there's semantic confusion in LTM, suggesting LTM is coded on a semantic basis.

Evaluation

Baddeley's findings make 'cognitive sense'. For example, if you had to remember a shopping list, you'd probably repeat it aloud (acoustic rehearsal) while walking to the shops, but if you recall a book you've read, you remember the plot, rather than every single word.

The small difference in recall between semantically similar (64 per cent) and semantically dissimilar (71 per cent) lists suggests there's also semantic coding in STM.

This was a laboratory study and therefore shows causality (cause and effect relationships), but may lack ecological validity (not representative of real-life activities).

As a laboratory study it can be replicated to check the results.

RESEARCH IN FOCUS

1 Baddeley's 1966 studies into coding in STM and LTM were experiments, but what type of experiment were they?
2 What type of experimental design was used?
3 Give one strength and one limitation of this design.
4 What were the IV and DV in the study?
5 What is a DV always a type of?

For information on research methods, see Chapter 7.

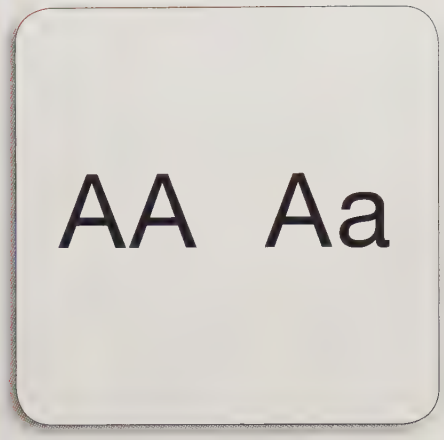


Figure 2.7 It is easier to decide that AA is the same letter repeated than is the case with Aa

Research

Posner & Keele (1967) found participants were faster in assessing that 'A' followed by 'A' was the same letter than when 'A' was followed by 'a'. Because the visual code differs when 'A' is followed by 'a', the findings show that visual coding was occurring, which illustrates how codes other than the acoustic one occur in STM.

Evaluation

- Although research shows that coding in STM is mainly acoustic, other sensory codes, such as visual, are used too. Indeed, some stimuli like faces or the smell of food would be difficult to code acoustically. What would the sound of treacle be?

KEY TERM

Chunking – method of increasing STM capacity by grouping information into larger units

Capacity of STM

STM has a limited capacity, as only a small amount of information is held in the store. Research indicates that between five and nine items can be held, though capacity is increased by **chunking**, where the size of the units of information in storage is increased by giving them a collective meaning. For example, chunking the twelve letters of SOSABCITVFBI into four chunks of SOS/ABC/ITV/FBI will increase capacity.

Research

Jacobs (1887) tested STM capacity with the serial digit span method, where participants are presented with increasingly long lists of numbers or letters and have to recall them in the right order. For example; '3, 9, 1' (followed by recall), '8, 5, 3, 9' (followed by recall), '2, 4, 7, 1, 3' (followed by recall) and so on. When participants fail on 50 per cent of tasks, they are judged to have reached their capacity. Jacobs found capacity for numbers was nine items and for letters seven items, which illustrates how the capacity of STM is limited. Numbers may be easier to recall as there are only nine single-digit numbers (0–9), compared to 26 letters in the English language (A–Z). One criticism is that experimental tasks such as recalling lists of letters have little relevance to everyday activities and so lack mundane realism.

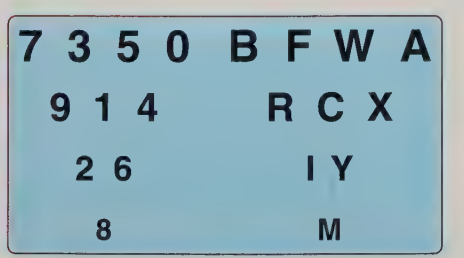


Figure 2.8 Numbers may be easier to remember as there are only nine of them compared to 26 letters of the English alphabet

Miller (1956) reviewed research to find the capacity of STM to be between five and nine items, but that the 'chunk' (pieces of information grouped together into meaningful sections) was the basic unit of STM. This means five to nine chunks can be held at any one time, increasing the store's capacity. Simon (1974) found that although STM capacity should be measured in terms of chunks, this varies with the type of material being recalled and the amount of information contained within the chunks.

Evaluation

- Other factors, like age and practice, also influence STM capacity and nowadays STM limitations are mostly seen as due to processing limitations associated with attention.

Research

There may be individual differences in STM capacity. Daneman & Carpenter (1980) found capacity varied between five and twenty items between those with advanced and poor reading comprehension.

Duration of STM

The amount of time information remains within STM without being lost is limited to a maximum of about 30 seconds. This can be extended by rehearsal (repetition) of the information, which if done long enough will result in transfer of the information into LTM, where it will become a more long-lasting feature.

Research

Peterson & Peterson (1959) read nonsense trigrams (words of three letters that don't form recognisable words, like ZFB) to participants, and then got them to count backwards in threes from a large three-digit number (to prevent repetition of the letters) for varying periods of time. They found that around 90 per cent of trigrams were recalled correctly after three seconds, but only 5 per cent after 18 seconds, which suggests STM duration has a capacity of between 20 and 30 seconds. However, the results may be due to flawed methodology. Because different trigrams were used on each trial, this may have led to interference between items, leading to decreased recall. Also, recalling nonsense trigrams has little relevance to STM tasks in everyday life and therefore lacks mundane realism.

Marsh *et al.* (1997) found that if participants weren't expecting to have to recall information, STM duration was only between two and four seconds, which suggests duration of STM is affected by the amount of time taken to process information.

Evaluation

- Reitman (1974) suggested the brief duration of STM is due to displacement; as new information comes into STM it pushes out existing information due to its limited capacity (see Explanations for forgetting, page 76).
- There is little in the way of research evidence considering the STM duration of other forms of stimuli, like visual images.

YOU ARE THE RESEARCHER

Design and carry out an experiment into STM duration. You'll need some nonsense trigrams for your participants. You'll also need a stop-watch to time the intervals between presentation and recall. One condition will involve a short time interval and the other condition a longer time interval.

What experimental design will you use? What will be the IV and DV? How many participants are needed? Use Peterson & Peterson's study to work out whether you need a directional or non-directional hypothesis and then construct suitable experimental and null hypotheses.

Draw up a table to record your data. Calculate totals and relevant measures of central tendency and dispersion. What conclusions can you draw from your data?

For information on research methods, see Chapter 7.

Long-term memory (LTM)

LTM involves storing information over lengthy periods of time, indeed for a whole lifetime, with information stored for longer than 30 seconds counting as LTM. All information within LTM will have originally passed through the SR and STM, though may have undergone different forms of processing during the process. Research indicates that there are several different types of LTM (see Types of LTM, pages 69–74) and LTMs are not of equal strength. Strong LTMs can be retrieved easily, like when your birthday is, but weaker LTMs may need more prompting. LTMs are not passive (unchanging) – over time they may change or merge with other LTMs. This is why memories aren't necessarily constant or accurate. There are several explanations for forgetting from LTM (see Explanations for forgetting, pages 76–83). Research also indicates that the process of shaping and storing LTMs is spread through multiple brain regions.

Coding in LTM

Coding involves the form by which LTMs are stored – the means by which information is shaped into representation of memories. Coding of information will be stronger (and thus the memory more retrievable) the deeper the level of processing of a stimulus that occurs while it is being experienced.

With verbal material, coding in LTM is mainly semantic (based on meaning), though coding occurs in other forms too, research indicating a visual and an acoustic code. (See Classic research – Baddeley (1966) on page 55.)

Research

Frost (1972) gave participants sixteen drawings in four categories of animals, clothing, vehicles and furniture, differing in visual orientation, like angle of viewing perspective. The order of recall of items suggested participants used visual and semantic coding, implying evidence for a visual as well as semantic code in LTM.

Nelson & Rothbart (1972) showed that acoustic coding also occurs in LTM, as participants made recall errors involving homophones, words that are pronounced the same but have different meanings, like 'night' and 'knight', again suggesting that coding in LTM has several varieties.

Evaluation

- It's difficult to see how smells and tastes could be coded semantically and logic suggests songs are encoded acoustically, supporting the idea of several forms of encoding in LTM.
- Different types of LTM involve different brain areas, with research suggesting that they are encoded in different ways, which implies that there are varying forms of coding within LTM.

Capacity of LTM

The potential capacity of LTM is unlimited. Information may be lost due to decay and interference, but such losses don't occur due to limitation of capacity.

Research

Anokhin (1973) estimated the number of possible neuronal connections in the human brain is 1 followed by 10.5 million kilometres of noughts. He concluded 'no human yet exists who can use all the potential of their brain', suggesting the capacity of LTM is limitless.

Wagenaar (1986) created a diary of 2,400 events over six years and tested himself on recall of events rather than dates, finding he too had excellent recall, again suggesting the capacity of LTM is extremely large. Diary studies, however, are a type of case study and therefore not representative of the general population and there could also be an element of bias as people are testing themselves.

Figure 2.9 Pigeons have an LTM; they can recall 1,200 picture response associations

Evaluation

- The capacity of LTM is assumed to be limitless, as research has not been able to determine a finite capacity.
- There may be an evolutionary basis to LTM; animal studies, like that by Fagot & Cook (1996), showed that pigeons can memorise 1,200 picture response associations. Baboons still hadn't reached their capacity after three years of training, memorising 5,000 associations. This suggests that an enlarged memory capacity has a survival value, which has been acted upon by natural selection.

Duration of LTM

Duration of LTM depends on an individual's lifespan, as memories can last for a lifetime; many elderly people have detailed childhood memories. Items in LTM have a longer duration if originally well coded and certain LTMs have a longer duration, like those based on skills rather than facts (see Types of LTM, page 69). Material in STM that isn't rehearsed is quickly forgotten, but information in LTM doesn't have to be continually rehearsed to be retained.

Research

Bahrick *et al.* (1975) showed 400 participants aged between 17 and 74 years a set of photos and a list of names, some of which were ex-school friends, and asked them to identify ex-school friends. Those who'd left high school in the last fifteen years identified 90 per cent of faces and names, while those who'd left 48 years previously identified 80 per cent of names and 70 per cent of faces, suggesting memory for faces is long lasting.

Goldman & Seamon (1992) asked participants to identify odours of everyday products experienced in the last two years and odours not experienced since childhood. Although identification (by name) was better for more recent odours, there was significant identification of less-recent odours, suggesting duration of olfactory (smell-based) information in LTM is very long lasting.

Evaluation

- Sometimes information in LTM appears to be lost, but may be a problem of access to the information rather than it not being in LTM (see Explanations for forgetting, page 76).
- The type of testing techniques used may affect findings from studies of duration of LTM. Recall is often better when asking participants to recognise stimuli, rather than getting them to recall stimuli.

Table 2.1 Summary of differences in coding, capacity and duration between the SR, STM and LTM

	Sensory register		Short-term memory		Long-term memory	
Coding	Separate sensory stores for different sensory inputs	Crowder (1993)	Mainly acoustic (by sound), other codes used too	Baddeley (1966): immediate recall study	Mainly semantic (by meaning), other codes used too	Baddeley (1966): delayed recall study
Capacity	Huge	Sperling (1960)	Small: 5–9 chunks of information	Jacobs (1887)	Huge	Anokhin (1973)
Duration	Brief: varies between different sensory stores	Walsh & Thompson (1978)	Short: maximum of 30 seconds	Peterson & Peterson (1959)	Potentially for a lifetime	Bahrick *et al.* (1975)

Evaluation

The MSM was the first cognitive explanation of memory and thus was influential, inspiring interest and research, and formed the basis for the working memory model leading to a greater understanding of how memory works.

There is considerable research evidence for the existence of the separate memory stores of the SR, STM and LTM (see studies of coding, capacity and duration).

The model is supported by amnesia cases (loss of memory). Patients either lose their LTM or their STM abilities, but not both, supporting the idea that STM and LTM are separate memory stores (see 'Increase your knowledge', below).

The serial position effect (Murdock, 1962) supports the MSM's idea of there being separate STM and LTM stores. Words at the beginning and end of a list are recalled better than those in the middle. Words at the beginning of the list, the primacy effect, are recalled because they've been rehearsed and transferred to LTM, while words from the end of the list, the recency effect, are recalled as they're still in STM.

The main criticism of the MSM is that it is over-simplified, as it assumes there are single STM and LTM stores. Research indicates several types of STM, like one for verbal and one for non-verbal sounds (see Working memory model, page 63), and different types of LTM, like procedural, episodic and semantic memories (see Types of LTM, page 69).

Cohen (1990) believes memory capacity cannot be measured purely in terms of the amount of information, but rather by the nature of the information to be recalled. Some things are easier to recall, regardless of the amount to be learned, and the MSM doesn't consider this.

MSM describes memory in terms of structure, namely the three memory stores and the processes of attention and verbal rehearsal. However, MSM focuses too much on structure and not enough on processes.

INCREASE YOUR KNOWLEDGE

Case studies of amnesia support the MSM, as retrograde amnesia affects **retrieval** from LTM abilities, while anterograde amnesia affects the ability to transfer information from STM to LTM. They also support the idea of there being separate types of LTM, as generally not all forms of LTM will be affected.

Scott Bolzan (see 'In the News', page 52) is an example of retrograde amnesia, where he lost access to his LTMs (though not his procedural LTM), but could still create new memories by transferring STMs to LTM.

Scoville (1957), in an attempt to treat HM's epilepsy, removed brain tissue that resulted in HM having anterograde amnesia, being unable to encode new long-term memories, although his STM seemed unaffected, supporting the idea of separate memory stores. HM donated his brain to science on his death in 2008 aged 82.

In 1985 musician Clive Wearing caught a virus that caused brain damage and amnesia that robbed him of the ability to transfer STMs into LTMs, as well as some LTM abilities. However, his procedural LTM was intact; he could still play the piano, though he had no knowledge that he was able to.

RESEARCH IN FOCUS

1 Why is it only really possible to use the case study method to investigate amnesia?
2 What are the strengths and weaknesses of the case study method?
3 What other study methods do case studies often use?

For information on research methods, see Chapter 7.

KEY TERM

Retrieval – the recall of stored memories

ON THE WEB

Watch a video lecture by Professor Jens Bo Neilsen on the amnesia case study of HM (Henry Molaison) on YouTube by searching for 'Intro to Memory/ Encoding Part 1a'.

You can also read more about HM, including how he gave permission for his brain to be studied after his death, at:

http://bigpictureeducation.com/brain-case-study-patient-hm

You can see a video about the case study of Clive Wearing on YouTube by searching for 'Clive Wearing Living Without Memory'.

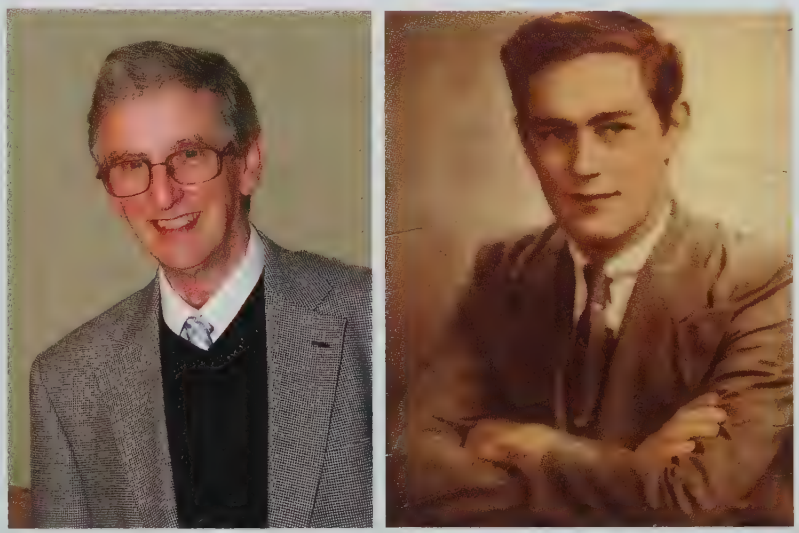


Figure 2.10a and b Clive Wearing and Henry Molaison – two case studies of amnesia

STRENGTHEN YOUR LEARNING

1 What is meant by the terms:
   (i) coding
   (ii) capacity
   (iii) duration?
2 What is the difference between the echoic and iconic stores in the SR?
3 What is chunking?
4 What difference in procedure was there between Baddeley's studies of coding in STM and LTM?
5 Outline the procedure and findings of Peterson & Peterson's 1959 study into duration of STM.
6 Outline the procedure and findings of Bahrick *et al.*'s 1975 study of duration of LTM.
7 Why do case studies of amnesia support the MSM?

ASSESSMENT CHECK

1 Following a viral infection, Travis suffered damage to his memory. He was unable to learn new information and could not recall events occurring a short while before. However, his memory from before his illness was not affected. For example, he knew that he was married to Lois and he could still play the guitar, an ability learned as a child.

Use your knowledge of the MSM to explain the change in Travis' memory ability. **[4 marks]**

2 Explain how information is coded within short-term memory. **[3 marks]**

3 In the boxes next to the descriptions and statements below, write 'SR' next to the two that relate to the sensory register, 'STM' next to the two that relate to short-term memory and 'LTM' next to the two that relate to long-term memory. One description or statement will be left over. **[6 marks]**

A Coding is mainly acoustic. ☐

B A short-duration store holding unprocessed impressions of information ☐

C The first storage system within the MSM ☐

D A slave system containing visual and spatial information ☐

E Duration is for potentially a lifetime. ☐

F Capacity is limited to between five and nine items. ☐

G Information that is rehearsed sufficiently will be transferred here. ☐

4 Outline and evaluate the multi-store model of memory. Refer to evidence in your answer. **[16 marks]**

5 Discuss the role of the sensory register and short-term memory within the multi-store model. **[12 marks]**

6 Research studies of the MSM are often conducted by laboratory experiments. Briefly explain one strength and one limitation of laboratory experiments. **[2 + 2 marks]**

2.2 The working memory model (WMM)

Baddeley & Hitch (1974) questioned the existence of a single STM store (their model doesn't concern LTM), arguing STM was more complex than just being a temporary store for transferring information to LTM. They saw STM as an 'active' store, holding several pieces of information while they were being worked on (hence 'working' memory). Cohen (1990) described working memory as: 'the focus of consciousness – it holds information consciously thought about now'. The **working memory model (WMM)** should not be seen as a replacement for the MSM, but more as an explanation based upon the MSM.

To replace the single STM store of the MSM, Baddeley & Hitch proposed a multi-component working memory (WM) of initially three components. At the head of the model is the **central executive (CE)**, which oversees the two 'slave' systems, the **visuo-spatial sketchpad (VSS)** and the **phonological loop (PL)**, temporary stores that process specific types of information. A fourth component, the **episodic buffer (EB)**, was added in 2000 to address shortcomings of the model.

KEY TERMS

Working memory model (WMM) – an explanation that sees short-term memory as an active store holding several pieces of information simultaneously

Central executive (CE) – component of the WMM that oversees and co-ordinates the components of working memory

Visuo-spatial sketchpad (VSS) – component of the WMM that deals with visual information and the physical relationship of items

Phonological loop (PL) – component of the WMM that deals with auditory information

Episodic buffer – component of the WMM that serves as a temporary store of integrated information from the central executive, phonological loop, visuo-spatial sketchpad and LTM

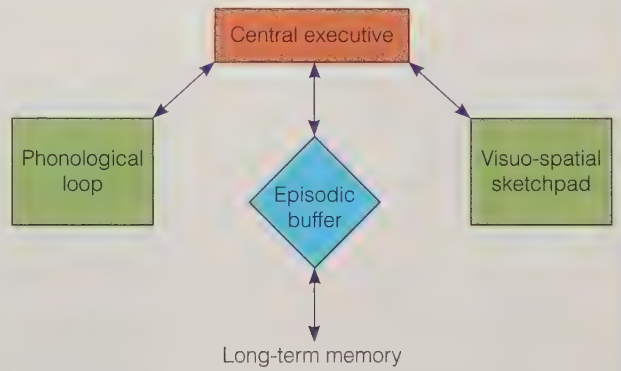


Figure 2.11 The working memory model

The central executive (CE)

The central executive (CE) acts as a filter to determine which information received by the sense organs is and isn't attended to. It processes information in all sensory forms, directs information to the model's slave systems and collects responses. It's limited in capacity and can only effectively cope with one strand of information at a time. It therefore selectively attends to particular types of information, attaining a balance between tasks when attention needs to be divided between them, for example, talking while driving. It also permits us to switch attention between different inputs of information.

Research

Baddeley (1996) discovered participants found it difficult to generate lists of random numbers while simultaneously switching between pressing numbers and letters on a keyboard, suggesting the two tasks were competing for CE resources. This supports the idea of the CE being limited in capacity and only being able to cope with one type of information at a time.

D'Esposito *et al.* (1995) found using fMRI (functional magnetic resonance imaging – see Chapter 6) scans that the prefrontal cortex was activated when verbal and spatial tasks were performed simultaneously, but not when performed separately, suggesting the brain area to be associated with the workings of the CE.

Evaluation

- Little is known about the central executive. It isn't clear how it works or what it does. This vagueness means it can be used to explain almost any experimental results. If two tasks cannot be performed together, then the two processing components are seen as conflicting, or it is argued that the tasks exceed the central executive's capacity. If two tasks can be done simultaneously, it's argued they don't exceed the available resources, in essence a circular argument (an argument that continually proves itself).
- The CE is probably better understood as a component controlling the focus of attention rather than being a memory store, unlike the PL and the VSS, which are specialised memory stores.

Phonological loop (PL)

The PL deals with auditory information (sensory information in the form of sound) and the order of the information, like whether words occurred before or after each other. The PL is similar to the rehearsal system of the MSM, with a limited capacity determined by the amount of information that can be spoken out loud in about two seconds. As it's mainly an acoustic store, confusions occur with similar sounding words.

Baddeley (1986) divided the PL into two sub-parts; the **primary acoustic store (PAS)** and the **articulatory process (AP)**. The PAS, or inner ear, stores words recently heard, while the AP, or inner voice, keeps information in the PL through sub-vocal repetition of information and is linked to speech production.

KEY TERMS

Primary acoustic store (PAS) – part of the phonological loop, stores words heard

Articulatory process (AP) – part of the phonological acoustic store, allows sub-vocal repetition of information within the store

Research

Trojani & Grossi (1995) reported a case study of SC, who had brain damage affecting the functioning of his PL but not his VSS, suggesting the PL to be a separate system.

Baddeley *et al.* (1975) reported on the word length effect, where participants recalled more short words in serial order than longer words, supporting the idea that capacity of the PL is set by how long it takes to say words, rather than the actual number of words.

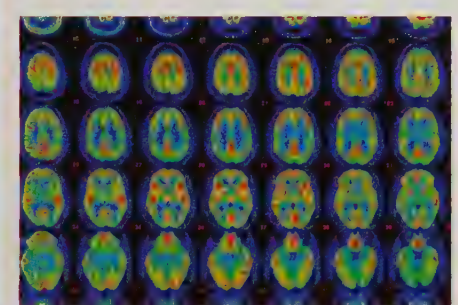


Figure 2.12 PET scans produce images that allow psychologists to see which brain areas are involved with different types of memory

Evaluation

- PET scans show that different brain areas are activated when doing verbal and visual tasks, which suggests that the PL and the visuo-spatial sketchpad (VSS) are separate systems, reflected in the biology of the brain.
- The PL is strongly associated with the evolution of human vocal language, with the development of the slave system seen as producing a significant increase in the short-term ability to remember vocalisations. This then helped the learning of more complex language abilities, such as grammar and expressing meaning.

Visuo-spatial sketchpad (VSS)

The VSS, or inner eye, handles non-phonological information and is a temporary store for visual and spatial items and the relationships between them (what items are and where they're located). The VSS helps individuals

to navigate around and interact with their physical environment, with information being coded and rehearsed through the use of mental pictures.

Logie (1995) suggests sub-dividing the store into a **visual cache (VC)**, which stores visual material about form and colour, and an **inner scribe (IS)**, which handles spatial relationships and rehearses and transfers information in the visual cache to the CE.

Research

Gathercole & Baddeley (1993) found participants had difficulty simultaneously tracking a moving point of light and describing the angles on a hollow letter F, because both tasks involved using the VSS. Other participants had little difficulty in tracking the light and performing a simultaneous verbal task, as both tasks involve using the VSS and the PL, indicating the VSS to be a separate slave system.

Klauer & Zhao (2004) reported more interference between two visual tasks than between a visual and a spatial task, implying the existence of a separate visual cache and inner scribe.

Evaluation

- As well as showing the PL and the VSS to be located in different brain areas, PET scans also show brain activation in the left hemisphere of the brain with visual tasks and activation in the right hemisphere with spatial information, which further supports the idea of dividing the VSS into a separate VC and IS.
- Studies of the VSS (and the PL) often feature a dual task technique, where participants have to perform two simultaneous activities. However, the actual tasks performed are often not ones encountered much in everyday life and so such studies can be accused of being artificial and lacking in mundane realism.

YOU ARE THE RESEARCHER

Design an experiment to test whether participants can do two acoustic tasks at the same time. Firstly get someone to speak some numbers into a participant's ear; the participant has to add them up. Then get two people to simultaneously speak different numbers into both of the participant's ears and see if the participant can add them both up separately. What would be your IV? Your DV? How could you do something similar for: (i) two visual tasks; (ii) one visual and one acoustic task?

Figure 2.13 Can people perform two acoustic tasks at the same time?

For more on research methods, see Chapter 7.

KEY TERMS

Visual cache (VC) – part of the VSS, stores information about form and colour

Inner scribe – part of the VSS, stores information about the physical relationships of items

The episodic buffer

Baddeley (2000) added a third slave system, the episodic buffer (EB), as the model needs a general store to operate properly. The PL and the VSS deal with the processing and temporary storage of specific types of information,

but have limited capacity, and the CE has no storage capacity, and so cannot contain items relating to visual and acoustic properties. Therefore, the EB was introduced to explain how it is possible to temporarily store information combined together from the CE, the PL, the VSS and LTM.

Research

Prabhakaran *et al.* (2000) used fMRI scans to find greater right-frontal brain activation for combined verbal and spatial information, but greater posterior activation for non-combined information, providing biological evidence of an EB that allows temporary storage of integrated information.

Alkhalifa (2009) reported on a patient with severely impaired LTM who demonstrated STM capacity of up to 25 prose items, far exceeding the capacity of both the PL and the VSS. This suggests the existence of an EB, which holds items in working memory until they are recalled.

PSYCHOLOGY IN THE REAL WORLD

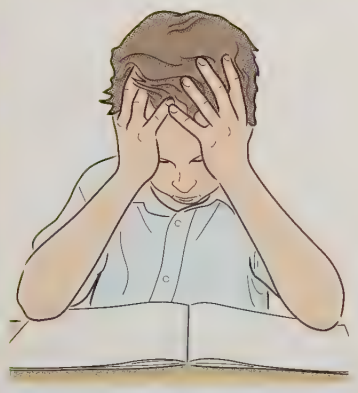


Figure 2.14 Children with ADHD often have impairments in their working memory

The WMM suggests practical applications; especially for children with attention deficit hyperactivity disorder (ADHD) relating to impairments of working memory (WM). Alloway (2006) recommends several methods to help children focus on the task at hand:

1. Use brief and simple instructions so they don't forget what they're doing.
2. Break instructions down into individual steps.
3. Frequently repeat instructions.
4. Ask the child to periodically repeat instructions.

Klingberg *et al.* (2002) additionally report that computerised working memory training, using systematic exercises to produce cognitive gains, is beneficial to those with poor WM.

CONTEMPORARY RESEARCH

Exhibiting the effects of the episodic buffer (EB) on learning with serial and parallel presentations of materials – Ashaa Alkhalifa (2009)

As well as being a psychologist, Ashaa Alkhalifa is a member of the royal family of Bahrain, and has devised a method of testing for the existence of the episodic buffer as a general store for material integrated from other memory stores.

Aim

To determine the existence of the EB by seeing if parallel presented information overwhelms both the PL and the VSS, causing a reduction in learning, while the same information presented sequentially exhibits superior learning by being stored firstly in the PL and the VSS and then filtered to the EB, which should have a larger capacity.

Procedure

48 university students were presented with numbers on a screen given either as a sequence, one after another (e.g. 1, 2, 3, 4) or in parallel fashion where numbers appeared in different parts of the screen simultaneously. Numbers of sufficient complexity were used to overwhelm the capacities of both the phonological loop and the visuo-spatial sketchpad. Participants were required to answer a number of problem-solving questions concerning the numbers presented.

Findings

Participants given numbers presented in a sequence got more problem-solving questions right than those given numbers presented in parallel fashion.

Conclusions

As sequential processing was more effective, it suggests the total capacity of WM is larger than that determined by

the capacity of the phonological loop and the visuo-spatial sketchpad, implying the existence of the EB. There is a limit to the amount of information that can pass from perception to learning, as parallel processing causes a hindrance to learning.

Evaluation

The findings suggest practical applications in the designing of educational systems, as students will be able to learn more material with teaching methods that use sequential rather than parallel means.

As a laboratory study the findings may lack external validity, i.e. a lack of generalisability to other settings.

It may be that the EB provides the storage space and the CE the underlying processing of information that allows the separation of accurate recall from false memories and delusions.

The addition of the EB shows how the process of science works, with the model being updated after research highlighted shortcomings of the explanation. Therefore, the addition of the EB 26 years after the model was first suggested can be seen as a strengthening of the model's ability to explain how memory works.

ON THE WEB

Professor Alan Baddeley is one of the most famous names in memory research and helped form the WMM. A video interview from 2010 that has him talking about all aspects of the WMM can be found at:

https://www.youtube.com/watch?v=mT0NLihOK30

STRENGTHEN YOUR LEARNING

1. Name the four main components of the WMM and briefly describe their functions.
2. What is the difference between:
   (i) the primary acoustic store (PAS) and the articulatory loop (AL)
   (ii) the visual cache (VC) and the inner scribe (IS)?
3. Give details of one research study that suggests that a visual and an acoustic task can be performed simultaneously.
4. Explain why the WMM doesn't work without the episodic buffer (EB).

ASSESSMENT CHECK

1 Walter is able to draw an accurate picture of his friend's face while simultaneously adding up numbers spoken aloud to him by his friend. Thinking he must be very talented, Walter was disappointed to find that he could not draw an accurate picture of his friend's face with one hand while at the same time tracing a moving dot of light with his other hand.

Use your knowledge of the WMM to explain why Walter is sometimes unable to perform two tasks at the same time. **[4 marks]**

2 Outline the central executive and episodic buffer components of the WMM. **[3 + 3 marks]**

3 Discuss features of the WMM. **[16 marks]**

4 Outline and evaluate the working memory model. **[12 marks]**

5 Below is a list of components that relate to the WMM. Select from them to complete the table that describes different parts of the model. One component will be left over. **[4 marks]**

Central executive

Visual cache

Semantic memory

Episodic buffer

Articulatory process

Name of component	Description of component
	A filter determining which information is attended to
	Allows sub-vocal repetition of information stored in the phonological loop
	Stores information about form and colour
	A slave system dealing with processing and temporary storage of specific types of information

6 Research studies of the WMM sometimes use case studies of patients with brain damage that affects the functioning of their memory. Explain ethical considerations researchers would have to take into account when conducting such research. **[4 marks]**

2.3 Types of long-term memory

The WMM shows that the MSM is over-simplified as an explanation of memory, as there is more than one type of short-term memory store and the situation is the same with LTM; research indicates the existence of several types, each with a separate function and associated with different brain areas. The main sub-division of LTM is into explicit (also known as declarative, as it's easy to put into words) and implicit (also known as non-declarative, as it's not easy to express in words) types. Explicit LTMs are ones recalled only if consciously thought about, while implicit LTMs don't require conscious thought to be recalled. Explicit memories are also often formed from several combined memories.

Two types of explicit LTM are featured in this chapter: semantic and **episodic memories**, and one type of implicit LTM, procedural memory.

KEY TERM

Episodic memory (EM) – a form of LTM for events occurring in an individual's life

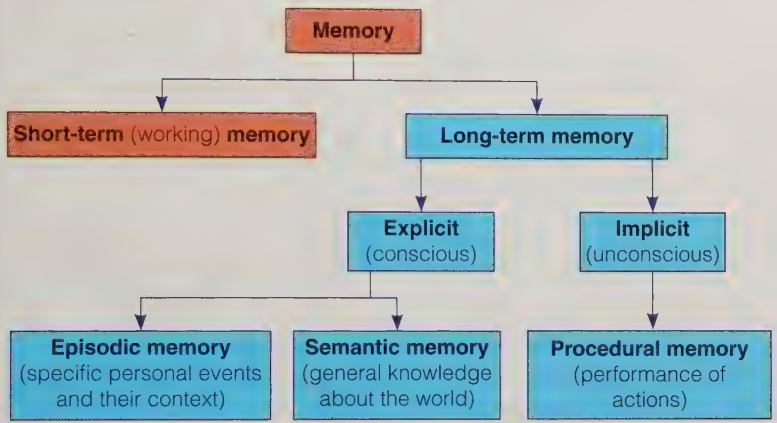


Figure 2.15 Types of long-term memory

Episodic LTM

Episodic LTM, first suggested by Endel Tulving (1972), is the memory that gives individuals an autobiographical record of personal experiences: when their birthday is, the circumstances of their children being born, etc. The strength of episodic memories is influenced by emotions present at the time a memory is coded; for example traumatic events are often well recalled due to their high emotional content. Strength of episodic memories is also affected by the degree of processing of information at coding, with highly processed episodic events recalled more easily. It is thought that episodic memory helps individuals to distinguish the difference between real events and imagination/delusions.

The prefrontal cortex brain area is associated with initial coding of episodic memories, with consolidation (strengthening) and storage of the memories associated with the neocortex. Memories of the different parts of an event are located in the different visual, auditory, olfactory, etc. areas of the brain, but are connected together in the hippocampus to create a memory of an episode rather than remaining a collection of separate memories.

Figure 2.16 Remembering when your birthday is is an example of episodic LTM

CLASSIC RESEARCH

Memory: performance, knowledge and experience – Endel Tulving (1989)

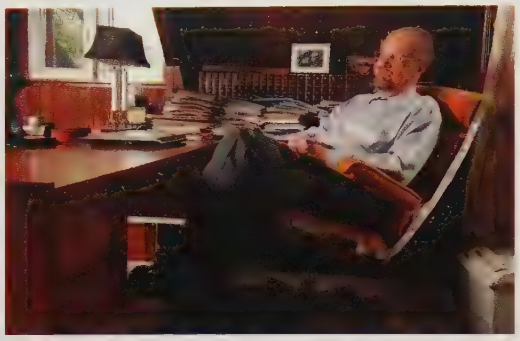


Figure 2.17 Endel Tulving

Early research into memory was concerned with identifying which brain areas were involved, but Estonian psychologist Endel Tulving was more interested in the mental processes occurring not just during retrieval of memories, but during storage too. Tulving wanted to assess memory as a conscious experience and not just document it as a form of performance. He therefore studied LTM from a much more cognitive approach than before.

Aims

- To investigate possible differences in the processing of episodic and semantic memory tasks.
- To assess the effectiveness of neuro-imaging as a means of investigating mental processes.

Procedure

1 Six volunteers were injected with a small amount of radioactive gold, which was scanned to detect its location with a gamma ray detector. Tulving was one of the participants, along with his wife and a colleague.

2 Each participant performed 8 successive trials, each lasting 80 seconds, involving 4 semantic and 4 episodic topics in randomised order.

3 Individual trials were separated by 2 minutes of rest each. A participant would lie, face up, on a couch with their eyes closed and indulge in either episodic or semantic LTM retrieval. The retrievals involved silent mental thought rather than physical stimulation or recording of behaviour. Participants selected what topics they would think about: episodic ones involving personally experienced events, like a holiday, and semantic ones involving general knowledge acquired through learning, like by reading a book.

4 At a signal from a researcher a participant would begin thinking about a topic, the gold being injected in after 60 seconds and the scanning occurring about 8 seconds later, after the gold tracer had arrived in the brain. The scanning process took another 2.4 seconds.

Findings

Three participants produced inconclusive data. Data from the other three participants showed consistent differences in cortical blood flow patterns between semantic and episodic thinking. There was greater activation in the frontal lobes (anterior regions) of the cortex during thinking about episodic memories and greater activation in the posterior region of the cortex when retrieving semantic information.

Conclusions

Episodic and semantic LTMs appear to involve different brain areas and thus are separate forms of LTM.

The fact that episodic and semantic LTMs involve different brain areas suggests a biological basis to differences in LTM.

Evaluation

The identification of the involvement of the frontal lobes during episodic recall is supported by observations of the memory abilities of brain-damaged amnesiacs. Those with impaired episodic LTM tend to have damage to the frontal lobes.

The study provided, through successful use of neuro-imaging, an effective means of objectively studying and measuring cognitive processes within live participants.

As only 3 out of 6 participants showed differences between processing of episodic and semantic LTMs, the findings cannot be seen as conclusive or generalisable to the population as a whole.

As Tulving himself was one of the participants, plus his wife and another colleague, it may have been difficult to conduct the study and analyse the findings in an unbiased, objective manner.

ON THE WEB

A 5-minute video on the influential work of Endel Tulving, featuring the man himself, can be found on YouTube by searching for 'Dr Endel Tulving'.

Research

Herlitz *et al.* (1997) assessed explicit LTM abilities in 1,000 Swedish participants, finding that females consistently performed better than males on tasks requiring episodic LTM, although there were no differences in semantic LTM ability. This suggests that there are gender differences in episodic memory ability, which may be explained in part by females generally having higher verbal ability.

Evaluation

- The extent to which episodic and semantic memory systems are different is unclear, as although different brain areas are involved, there is also a lot of overlap between the two systems, with semantic memories often clearly originating in episodic memory. Whether, therefore, the gradual transformation of an episodic into a semantic LTM means a change in memory systems cannot be certain.
- It may be that episodic memory differs from that of semantic memory in terms of different types of thinking and emotion; episodic memories are associated with conscious awareness of events and emotional feelings related to them, while semantic memories are associated with objective analysis of phenomena.

PSYCHOLOGY IN THE REAL WORLD

Figure 2.18 Scientists are attempting to programme episodic memory into a robot

Scientists at Vanderbilt University, USA, using knowledge of how memory works, are trying to programme episodic memory into their robot ISAC, the ultimate aim being to more closely mimic the brain functions of a human.

Already ISAC can recall specific past experiences to solve a current problem, just like a human would do and can indirectly affect the carrying out of tasks by influencing information placed in working memory. When given a new task, ISAC creates associations between the new task and stored experiences and then uses these associations to decide which information is entered into working memory. ISAC also uses episodic memory to relate past experiences of success and failure in different situations to decide preferences in new situations, which allows ISAC to influence goal and task setting.

Attempts are now being made to give ISAC an episodic buffer, so that it can combine information from separate memory channels involving different types of sensory input (just like the VSS and PL do in a human) into single memory chunks.

CONTEMPORARY RESEARCH

Using imagination to understand the neural basis of episodic memory – Demis Hassibis, Dharshan Kumaran, Eleanor Maguire (2007)

Figure 2.19 Episodic memories that use different brain areas may be the way individuals tell the difference between reality and fantasy

Episodic memory is generally seen as occurring through reconstructing experiences individuals have had, with research indicating that a number of brain areas are involved. However, Demis Hassibis and colleagues came up with a research variation whereby neuro-imaging of the brain would occur while participants thought about either true experiences they had had or imaginary ones.

Aim

To investigate whether different brain areas are involved in episodic LTM involving real and imagined experiences.

Procedure

1 10 male and 11 female participants, aged between 18 and 31, i) recalled recent episodic memories, ii) recalled fictitious experiences created during a pre-scan interview one week before and iii) constructed entirely new fictitious experiences while being scanned.

2 Interviews were conducted one week before scanning, with individual participants performing four tasks.
Real objects condition (ROC) – participants were shown

on a computer screen images of 10 everyday objects (for instance, a picture of a red fire extinguisher) along with written descriptions underneath the images (like 'a red fire extinguisher with black nozzle') for 20 seconds each.
Imagined objects condition (IOC) – 10 verbal descriptions of everyday objects were read out (like 'a fancy gold-plated pen with a silver nib and the initials JT engraved along the casing'); participants closed their eyes and tried to imagine visual images of the objects for 20 seconds each.
Imagined scene condition (ISC) – participants were asked to create 10 fictitious scenes prompted by short verbal cues of believable settings (like 'lying on a beach in a tropical sandy bay'). Participants had 2–3 minutes to describe each scene in as much detail as possible. (Each of these scenes could not be of a true or planned experience.)
Real memory condition (RMC) – participants were asked to describe 10 recent episodic memories.

3 During fMRI scans one week later, participants were given a one-word cue, flashed up onto a computer screen, that described what kind of trial type was being assessed.
'Recall' – a description of a real memory or object seen in the interview session (RM and RO conditions)
'Recreate' – reconstruction of scene/object created in the interview session (IS and IO conditions)
'Imagine' – construction of new fictitious scene or object (NS and NO conditions)
'Focus' – imagination of and focusing upon an imaginary white crosshair on a black background

4 Seven conditions (three scene conditions: RMC, IS, NSC; three object conditions: ROC, IOC, NOC; and the low imagery baseline condition) with 10 trials per condition, yielding 70 trials in total. Scanning consisted of four main sessions lasting around 11 minutes each during which 17 or 18 trials were randomly presented such that two or three trials were presented per condition, and never the same condition twice in a row. Text cues remained on the screen for 5.5 seconds and were then replaced by a 'close your eyes' text instruction.

Findings

By using comparisons of the fMRI scans for the different conditions, it was possible to identify that scene construction involved a wide range of brain areas, including the hippocampus, parahippocampal gyrus, and retrosplenial cortex and these were different from episodic memory-specific responses, which involved the anterior medial prefrontal cortex, posterior cingulate cortex and precuneus brain areas.

Conclusions

Episodic LTMs involving real and imagined experiences involve different brain areas.

The anterior medial prefrontal cortex, posterior cingulate cortex and precuneus brain areas are involved in familiarity processes that enable individuals to tell the difference between real and imaginary memories.

Evaluation

The study shows that imagining new experiences can be an effective experimental tool that may prove useful in increasing understanding of episodic memory and the processes underpinning it, as well as other related cognitive functions.

It may be that individuals who experience delusions and/or have difficulty in distinguishing between reality and fantasy have suffered damage to particular brain areas.

Semantic LTM

KEY TERM

Semantic memory (SM) – type of LTM for meanings, understandings and other concept-based knowledge

Semantic LTM is another type of explicit memory and contains all knowledge (facts, concepts, meanings, etc.) an individual has learned (though not when the knowledge was learned). The strength of **semantic memories**, like episodic memories, is positively associated with the degree of processing occurring during coding, though in general semantic memories seem to be better sustained over time than episodic ones. Semantic LTMs are linked to episodic LTMs, as new knowledge tends to be learned from experiences, with episodic memory therefore underpinning semantic memory. Over time there will be a gradual move from episodic to semantic memory with knowledge becoming increasingly divorced from the event/experience that it was learned from.

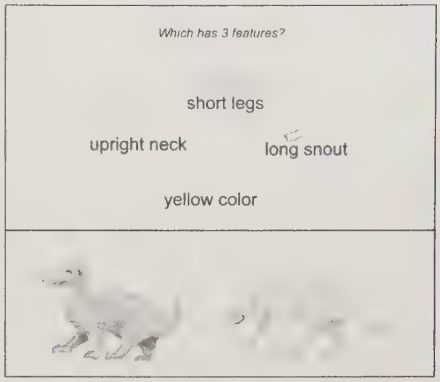
There is disagreement over which brain areas are involved in semantic LTM; some evidence suggests involvement of the hippocampus and related areas, while others believe there is usage of several brain areas. Coding is mainly associated with the frontal and temporal lobes.

Research

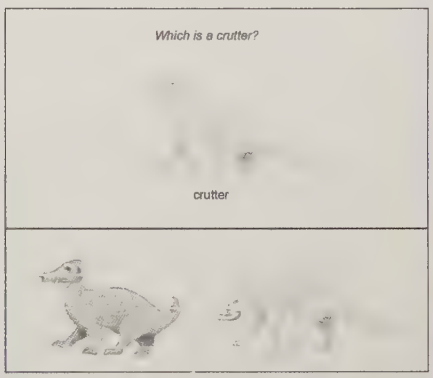
Kroenig (2007) created 64 imaginary, but believable drawings of animals, one of which was the prototype for 'crutters' (animals that shared three

particular features). Alzheimer sufferers and non-sufferers then had to decide which of the 64 drawings were of crutters. Participants had to use either direct comparison to make their assessments – judging which animals were crutters based on their similarity to the picture of the prototype – or they based their comparison on a stated rule that crutters matched the prototype on three of the four target features. Alzheimer sufferers were as good as non-sufferers when using direct comparison, but inferior when using the stated rule. As using a stated rule involves higher-level processing, it suggests semantic memory involves different processes and brain areas.

Vicari *et al.* (2007) reported on the case study of CL, an eight-year-old girl who suffered brain damage due to the removal of a tumour. She demonstrated deficiencies in her episodic LTM functions, especially in creating new episodic memories, but was still able to create and recall semantic memories. This suggests that episodic and semantic memory are separate systems using different brain areas, with the hippocampus associated with episodic memory and the perirhinal cortex with semantic LTM.



Rule-based training trial



Similarity-based training trial

Figure 2.20 'Crutters' – make-believe animals used by Kroenig (2007) to investigate semantic LTM

Evaluation

- Semantic memory may involve more of a network of associated links performed in different brain areas, rather than being a single form of memory ability. Some links may be stronger than others or quicker to access, explaining why some semantic memories appear to be easier to recall than others.
- The fact that damage to different areas of the brain can affect semantic memory abilities differently supports the idea that semantic memory abilities are spread throughout brain structures, while also supporting the idea that semantic memory may consist of several interrelated memory abilities and therefore not be a single type of memory.

Procedural LTM

Procedural LTM is a type of implicit memory permitting individuals to perform learned tasks with little conscious thought, for instance riding a bicycle. Although seemingly easy to do, procedural LTMs are difficult to explain in words (and so are classed as being non-declarative). Many procedural LTMs occur early in life, involving the learning of important motor skills, like walking, dressing, etc. Procedural LTM is also involved in language, helping individuals to speak automatically, using grammar and syntax without thinking how to. This shows how procedural and semantic memories work together. As **procedural memory** doesn't require conscious thought, it permits people to simultaneously perform other cognitive tasks that require attention.

Procedural LTM is associated mainly with the neocortex brain areas of primary motor cortex, cerebellum and prefrontal cortex, and unlike explicit forms of LTM, doesn't need the hippocampus to function.

KEY TERM

Procedural memory (PM) – type of LTM for the performance of particular types of action

Research

Finke *et al.* (2012) reported the case study of PM, a 68-year-old professional cellist who suffered damage to various brain areas after contracting encephalitis, resulting in severe amnesia. His episodic and semantic LTM were very affected, but although he could not remember musical facts, such

as the names of famous composers, his ability to read and play music was unaffected, including the learning of new complex pieces.

Figure 2.21 Knowing how to surf is an example of procedural LTM

Van Gorp *et al.* (1999) compared 37 heavy cocaine users with 27 non-abusing controls on memory ability for a 45-day period after abstaining from the drug. The interesting finding was that the former cocaine users showed a faster increase in procedural memory ability than non-users. As abstinence from cocaine causes dopamine production to be much increased, it suggests dopamine plays a part in procedural LTM.

Evaluation

One problem in deciding which brain areas are involved in procedural memory is the relative lack of research. What is needed are case studies of people with brain damage that affects procedural memory but not explicit memory (semantic and episodic memory). However, such cases are rare.

Procedural memories generally take longer to learn than explicit memory abilities. This may be because procedural memory involves motor functions and spatial abilities, while explicit memory tends not to (though the learning of procedural memories can also involve higher-level processing too).

STRENGTHEN YOUR LEARNING

1 What is the difference between semantic, episodic and procedural LTMs?

2 (i) Detail the findings and conclusions of Tulving's 1989 study of LTM.

(ii) Give one strength and one limitation of the study.

3 Summarise the aims, procedure, findings and conclusions of Hassibis *et al.*'s 2007 study of episodic LTM.

ASSESSMENT CHECK

1 'I find it curious', said Mara, 'that when I try to remember the answers for my psychology test I have to think really hard, but when I ride my surfboard I don't have to think how to do it at all.'

With reference to types of LTM, explain why Mara finds remembering the answers to her psychology test more difficult than remembering how to surf. **[4 marks]**

2 Outline what is meant by procedural long-term memory. **[3 marks]**

3 Discuss types of long-term memory. **[16 marks]**

4 Outline and evaluate episodic and procedural long-term memory. **[12 marks]**

5 Select from the descriptions A, B, C and D to complete the table concerning types of LTM below. One description will be left over. **[3 marks]**

A Type of LTM for performing actions, tasks and skills

B Type of LTM for facts, meanings and concepts

C Type of LTM for events occurring in an individual's life

D Type of LTM for emotional responses

Type of LTM	Description
Episodic	
Semantic	
Procedural	

6 For the data in the table below, calculate:

(i) the mean

(ii) the median

(iii) the mode

(iv) the range. **[4 marks]**

Participant	Score on a LTM test
1	9
2	6
3	8
4	6
5	6
6	7
7	5

IN THE NEWS

Ψ The Psychological Enquirer

Discovering 'repressed' memories

In 1989 Laura B's sister Amy claimed to have discovered 'repressed' memories of sexual abuse by her own father, Joel Hungerford, when she was young. Laura B then attended 100 sessions of psychotherapy over nine months, often with her sister, building up a close relationship with her therapist. Five 'memories' of abuse were recovered that Laura B had no previous recollection of. These 'memories' would often start as unpleasant feelings (such as a dream of people walking in on her when on the toilet and feeling uncomfortable with it), which the therapist would then enlarge on through questioning, e.g. 'do you want to find out where that bathroom is?' Attempts to visualise the incident would occur and eventually actual sexual abuse by her father would be 'remembered', including being raped with a gun when a little girl. Laura B recalled the abuse continuing until two days before her wedding. These revelations were then reported to the police and charges brought against her father; the sisters also broke off all contact with their father.

But Joel Hungerford was a lot luckier than many who had been in his position; in 1995 the Supreme Court of New Hampshire ruled that the recovered memories were not admissible as evidence, due to them being 'not scientifically reliable'. Joel then sued the psychotherapist. From this case came the term 'Hungerford's law'; whereby accusations involving recovered memories can only be heard in court if they pass strict criteria to ensure their validity. The problem with such memories is the often highly suggestive questioning and methods used by therapists (e.g. 'guided visualisation'), leading to one accusation of them being a 'lobotomy for the modern age'. Before Joel Hungerford, many individuals, often loving fathers, had been publicly ruined and wrongly jailed for long periods over allegations of sexual abuse. Hundreds of accusers have subsequently withdrawn allegations of sexual abuse, many successfully suing their therapists. Work by psychologists like Elizabeth Loftus has helped to show how memories are not always accurate, this knowledge having huge implications for how court cases are conducted.

2.4 Explanations for forgetting

'As you get older three things happen, first your memory goes and the other two I can't remember.'

Norman Wisdom (2010)

KEY TERMS

Forgetting – the failure to retrieve memories

Retrieval failure – an explanation for forgetting when material is stored in the LTM but cannot be consciously recalled as a result of a lack of retrieval cues to 'jog the memory'

Interference/Interference theory (IT) – an explanation for forgetting when similar material is confused in recall from the LTM

Forgetting can be defined as a failure to retrieve memories (**retrieval failure**), with explanations varying between those that see information as no longer within storage, for example trace decay theory, and explanations that see forgetting as a failure to access stored information, i.e. the information is still within storage, but an individual cannot retrieve it – for example, **interference**.

Interference theory (IT)

IT sees forgetting as due to information in LTM becoming confused with or disrupted by other information during coding, leading to inaccurate recall. There are two forms of interference: proactive and retroactive.

1 **Proactive interference** – works forwards in time, occurring when information stored previously interferes with an attempt to recall something new; for example the memory of an old phone number disrupts attempts to recall a new phone number.

2 **Retroactive interference** – works backwards in time, occurring when coding new information disrupts information stored previously; for example the memory of a new car registration number prevents recall of a previous one.

Interference is generally researched by getting participants to learn two lists of word pairs, where the first word of each word pair is the same in both lists. After the lists have been memorised participants are given the first word of a pair and asked to recall which word goes with it. When proactive interference occurs, participants recall the first list of word pairs, while with retroactive interference the second list of word pairs is recalled.

KEY TERMS

Proactive interference – a form of interference that occurs when past memories inhibit an individual's full potential to retain new memories

Retroactive interference – a form of interference that occurs when newly learned information interferes with the recall of previously learned information

List A	List B
Prince – Light	Prince – Record
Sock – Bench	Sock – Letter
Child – Moon	Child – Gravel
Carrot – Bird	Carrot – Shirt
Door – Knife	Door – Pudding

Figure 2.22 Example of lists of word pairs used to test for interference in memory

Figure 2.23 Confusing an old car registration number with a new one is an example of forgetting due to interference

CONTEMPORARY RESEARCH

Remembering the street names of one's childhood neighbourhood – Henk Schmidt et al. (2000)

Figure 2.24 Street map of Molenberg in Holland

Many studies of interference use artificial laboratory conditions and thus have little relevance to real life. However, Henk Schmidt and his colleagues devised a method of testing for interference in a real-life setting by using childhood memories of street names.

Aim

To assess the influence of retroactive interference upon the memory of street names learned during childhood.

Procedure

1 700 names were selected randomly from a database of 1700 former students of a Dutch elementary school and were sent a questionnaire. 211 participants responded, ranging in age from 11 to 79 years, and were given a map of the Molenberg neighbourhood (where they had gone to school) with all 48 street names replaced with numbers and asked to remember as many of them as possible. Other relevant personal details were collected by questionnaire, such as how many times they had moved house, where they had lived and for how long, how often they visited Molenberg, etc.

2 The amount of retroactive interference experienced was assessed by the number of times individuals had moved to other neighbourhoods or cities (thus learning new sets of street names). This measurement was very variable; 25 per cent of participants had never moved, while one participant had moved 40 times.

Findings

There was a positive association between the number of times participants had moved house outside the Molenberg neighbourhood and the number of street names forgotten.

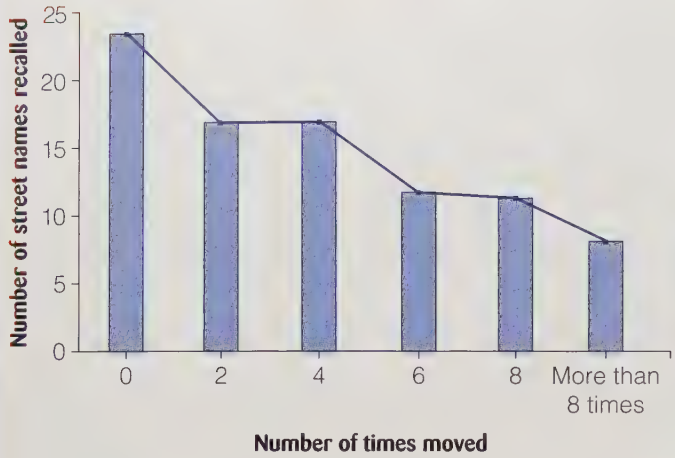


Figure 2.25 Number of street names recalled as a function of the number of times participants had moved to other neighbourhoods or cities

Conclusions

The findings suggest that learning new patterns of street names when moving house makes recalling an older pattern of street names harder to do.

Retroactive interference does seem able to explain forgetting in some real-life situations.

Evaluation

There are a number of extraneous variables that may have confounded results. For example, those who had played extensively in the neighbourhood or walked to school would probably have learned the street names to a greater degree than those who didn't play in the neighbourhood or who were driven to school.

The methodology used shows that it is possible to conduct research on retroactive interference in real-life settings; indeed the methodology could easily be adapted to test the influence of proactive interference too.

Research

Baddeley & Hitch (1977) got participants who had played a varying number of rugby union games to remember as many of the teams they had played against as possible. Interference theory was tested by assessing how recall was affected by the number of games played, while trace decay theory (see 'Increase your knowledge', page 81) was tested by assessing the amount of time that had passed between each game played. It was found that forgetting was due more to the number of games played rather than time passed between games, supporting interference theory rather than decay theory.

Abel & Bauml (2013) gave participants either a single list of word pairs to learn or two lists that would cause interference (the first word of each word pair being the same in both lists). Participants were tested on their memory of the lists after twelve hours of either wakefulness or sleep and it was found that sleep reduced both proactive and retroactive interference. This suggests that sleep helps to strengthen and stabilise memory content, making it less vulnerable to interference at recall.

Evaluation

- The main criticism of interference is that it only really explains forgetting when two sets of information are similar, for example when simultaneously learning French and Welsh at school. This does not happen very often and so interference cannot explain forgetting in the majority of real-life settings.
- Research into interference tends to use laboratory experiments based around artificial tasks, such as learning lists of word pairs, and as such can be accused of lacking mundane realism, not relating to real-life scenarios.
- Although studies show interference to be a real effect, they do not clearly identify the cognitive processes at work.
- There is more research support for **cue-dependent forgetting**, and other explanations of forgetting exist too, meaning IT cannot explain all examples of forgetting.

KEY TERM

Cue-dependent forgetting (CDF) – a type of forgetting based upon a failure to retrieve the prompts that trigger recall

Cue-dependent forgetting (CDF)

CDF occurs when information is still in LTM, but can't be accessed. CDF sees recall as dependent upon retrieval cues – like the labels on files in a filing system. Recall is dependent upon accessing information by remembering the retrieval cue under which the information is stored. Tulving (1973) explained this as the encoding-specificity principle, where recall is hindered if the context of recall is different to that at coding. The effectiveness of a retrieval cue depends on how overloaded it is (the fewer the number of items associated with it, the more effective the cue), how deep the processing of the cue was and how well the cue fits the information associated with it.

There are two main forms of CDF: **context-dependent failure** and **state-dependent failure**.

- **Context-dependent failure** – occurs with *external* retrieval cues, with forgetting occurring when the external environment is different at recall from how it was at coding – for example, getting fewer marks in a test when sitting the test in a room you're not familiar with than when sitting the test in your normal classroom.

Research

Abernethy (1940) found that participants after learning some material recalled it less well when tested by an unfamiliar teacher in an unfamiliar room than participants who were tested by a familiar teacher in a familiar room. This supports context-dependent failure as an explanation of forgetting.

Godden & Baddeley (1975) got divers to learn material either on dry land or while underwater. Recall was found to be worse when it occurred in a different context to coding than the same context, for example recalling words learned under water were recalled better when under water than on dry ground. This gives further support to the cue-dependent failure explanation.

- **State-dependent failure** – occurs with *internal* retrieval cues, with forgetting occurring when an individual's internal environment is dissimilar at recall to when information was coded – for example, trying to recall information learned when sober while you are drunk.

Research

Overton (1972) got participants to learn material when either drunk or sober and found that recall was worse when participants were in a different internal state at recall than their internal state at coding – for example, recalling information learned when drunk was better if the information had been learned when drunk rather than sober. This suggests that state-dependent failure is a valid explanation of forgetting.

Darley *et al.* (1973) found that participants who hid money while high on marijuana were less able to recall where the money was when they were not high than when they were high again, providing additional support for the ability of state-dependent failure to explain forgetting.

Figure 2.26 Cue-dependent forgetting sees memory as like a filing cabinet, as you'll need to recall the name of the file as a retrieval cue to access a particular memory

KEY TERMS

Context-dependent failure – a form of CDF where recall occurs in a different external setting to coding

State-dependent failure – a form of CDF where recall occurs in a different internal setting to coding

RESEARCH IN FOCUS

1. How might Overton's 1972 and Darley's 1973 studies into state-dependent failure be considered unethical?
2. What is a cost–benefit analysis and how might it be used to justify unethical aspects of research?

For information on research methods, see Chapter 7.

Gems	Birds	Instruments
Sapphire	Stonechat	Trumpet
Ruby	Crow	Guitar
Emerald	Dipper	Saxophone
Opal	Wren	Drum

Figure 2.27 Example of category headings and lists used in retrieval cue research

Retrieval failure is often assessed by giving participants lists of items to learn, and then measuring recall after category headings of items on the lists are given or not.

Tulving & Pearlstone (1966) gave participants a written list of 48 words to learn organised into twelve categories of four words each. At the top of each category was a one-word heading (for example, 'Fruit') followed by the names of four types of fruit. Participants were told they wouldn't have to recall the headings, just the words in the categories. Participants who weren't given the headings as cues to facilitate recall (free recall condition) remembered fewer words than participants given the headings as cues (cued recall condition). This supports the lack of retrieval cues as an explanation for forgetting.

Evaluation

Many studies supporting CDF are laboratory-based and not like everyday memory tasks, such as ones based on procedural memory. The ability to perform learned skills, like riding a bike, isn't affected by state-dependent failure.

Godden & Baddeley's findings only occurred when the divers had to free-recall items learned. When given a recognition test (involving saying whether a named item was in the learned list or not), the context-based effect wasn't seen, suggesting that cue-dependency can't explain all forms of forgetting.

Cue-dependent forgetting fits the levels of processing theory of memory that states the more deeply information is processed when coded (how much thinking, what types of thinking, etc. occur) the more links and associations will be created between items in LTM, decreasing the chances for forgetting, as more retrieval cues will be available to aid recall.

Many psychologists see CDF as the main reason for forgetting in LTM, due to the amount of research evidence supporting the importance of cues and how they trigger memory.

PSYCHOLOGY IN THE REAL WORLD

Figure 2.28 The reconstruction of the last moments of Danielle Jones

One practical use of knowledge gained by psychologists about cue-dependent forgetting is that of police reconstructions of unsolved crimes.

The aim is to jog the memory of witnesses by recreating the context of the incident through the use of retrieval cues, with participants wearing identical clothes and the reconstruction taking place in the same location and timescale as originally.

Danielle Jones was murdered in Essex in 2001, but her body was never found. Her uncle was eventually convicted, largely due to witness testimony that emerged after a reconstruction of the crime. Witnesses recalled seeing Danielle arguing with a man and getting into a blue transit van, a vehicle owned by her uncle. He was sentenced to life imprisonment.

INCREASE YOUR KNOWLEDGE

Several theories of forgetting in STM and LTM exist, with some theories explaining forgetting in either STM or LTM and some theories explaining forgetting in both.

Forgetting in STM

Two main theories have been put forward to explain forgetting in STM.

Trace decay (TD)

TD refers to a gradual fading of a memory. TD assumes that memories are stored as a physical trace called an engram and that memory traces decay over time.

Peterson & Peterson (1959) gave participants nonsense trigrams (words of three letters that don't make sense, e.g. EDF) and found that if rehearsal of information was prevented by subtracting numbers aloud, short-term memories of the trigrams decayed almost completely after 18 seconds (see page 57). This suggests that the information was no longer in storage in line with TD.

Kandel (2006) found that structural changes occurred in neurons in the hippocampus of sea slugs when repeatedly stimulated, which suggests that physical memory traces are created in STM and that they're transferred to LTM when they become permanent, again supporting the idea of physical traces being created in memory.

Evaluation of trace decay

Maybe information in STM is displaced by other information, rather than decaying. For instance, in Peterson & Peterson's study, the trigrams may have been displaced by the numbers recited to prevent rehearsal of the information.

Trace decay theory explains forgetting in STM and LTM, giving it the advantage of being a universal explanation, i.e. one that is applicable to all instances of forgetting.

Displacement theory (DT)

DT sees information as being lost from STM as it has a limited capacity (between five and nine items) and so new information displaces old information.

Waugh & Norman (1965) found that if a number (called the probe) from a list of numbers occurred nearer the end of a list than the beginning, recall of the next number was better. This suggests later numbers had displaced earlier ones from the limited-capacity STM store.

Shallice (1967) used the probe technique to assess both the **displacement** and decay theories, finding forgetting was less if numbers were presented faster (less chance for the information to decay), but also finding that changing the probe's position had a stronger effect (affecting the chances for displacement to occur). This indicates that both displacement and decay cause forgetting in STM, but that displacement is more important.

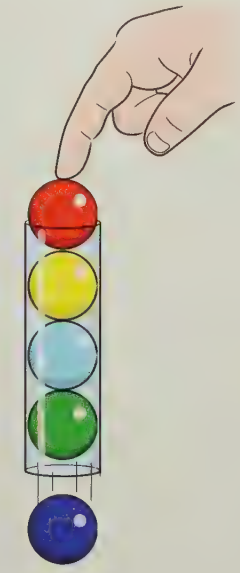


Figure 2.29 Displacement is based on the idea of more recent items in STM pushing out older ones

Evaluation of displacement theory

Displacement can only explain forgetting in STM; as the capacity of LTM is believed to be practically endless it would therefore be impossible for LTM to be 'full' allowing newer material to displace older material.

Displacement theory can help explain the recency effect seen in the serial position effect (see 'You are the researcher', below), where the last few items in a list are still within the STM span (of five to nine items) and so have not yet been displaced. If individuals have to concentrate on other items given after the list of items, then the recency effect disappears, presumably as the more recent items displace the last few items in the original list (though decay theory could be the reason too).

YOU ARE THE RESEARCHER

The serial position effect involves the primacy and recency effects (see evaluation of the MSM – Murdock (1962), page 60). Design a study using a list of about fifteen unconnected words to investigate this phenomenon.

Previous research indicates more words from the beginning and the end of the list will be recalled, so what kind of hypothesis would you use?

If you wished to perform subsequent research that only investigated the recency effect, how could you prevent the primacy effect from occurring?

For more on research methods, see Chapter 7.

KEY TERMS

Trace decay – an explanation of forgetting that sees physical traces (engrams) of memories fading over time

Displacement – an explanation of forgetting that sees the limited capacity of the short-term memory store resulting in new information replacing old information

RESEARCH IN FOCUS

Much research into forgetting involves laboratory experiments, which allow extraneous variables to be kept to a minimum. What are extraneous variables and how do they differ from confounding variables?

For information on research methods, see Chapter 7.

Repression

KEY TERMS

Repression – the placing of traumatic memories into the unconscious mind in order to reduce the anxiety they can produce

Another important explanation of forgetting in LTM is that of **repression**. Repression is a type of motivated forgetting where emotionally threatening events are thought to be banished into the unconscious mind, to prevent the feelings of anxiety they might cause. Although the repressed memories continue to affect conscious thoughts, desires and actions, they are difficult to retrieve. This is a controversial area, as repressed memories 'recovered' during repressed memory therapy have often proved to be false, a phenomenon known as false memory syndrome. The accusation here is that such therapists are unknowingly suggesting and planting false memories in clients (see In the news, page 76).

Research

Williams (1994) investigated repression in women who had been diagnosed as suffering childhood sexual assaults. Thirty-eight per cent of the females had no recall of the earlier abuse and of those who did recall it, 16 per cent reported that at one time they hadn't been able to recall it, but had now 'recovered' the memories. Williams also found that the earlier the age the abuse had supposedly occurred, the more likely it was not to be remembered. These findings suggest painful memories can be forgotten and then later 'recovered', supporting the concept of repression.

Karon & Widener (1997) found that many Second World War veterans who suffered battlefield trauma repressed the memories, and the resulting mental disturbance was only relieved by these memories being recovered in therapy, giving further support to the validity of repression as an explanation of forgetting.

Holmes (1990) reviewed 60 years of research into repression, finding no solid evidence of the phenomenon, weakening support for the explanation.

Bradley & Baddeley (1990) found that possibly anxiety and arousal depress STM, but enhance LTM. However, it may be that anxiety and arousal initially cause repression, but that it disappears over time, giving a different explanation as to why apparently forgotten memories are recovered.

Evaluation

One criticism of Williams' study is that it is unknown if the original diagnoses of abuse were correct. It may be that some women didn't have a memory of the abuse, because it simply didn't occur, rather than having repressed the memory. It may also be possible that some women do remember being abused, but choose to pretend not to remember it, as they don't wish to talk about it.

The idea of false memory syndrome is that it sees so-called 'recovered' memories as actually being false memories created through leading questions asked by therapists (questions that suggest certain false events may actually have occurred). Although some practitioners still argue that the technique is a valid one, the use of recovered memories as a psychotherapeutic technique is banned by the American Psychiatric Association and the British Psychological Society says there is no evidence to support the concept of recovered memories.

Several successful court cases have been fought in the USA where people convicted on the basis of recovered memories have shown this to be false and have won huge sums in compensation, weakening support for the concept of repression.

ON THE WEB

Watch renowned psychologist Elizabeth Loftus talk about false memories and EWT at a lecture she gave in Edinburgh in 2013 by searching YouTube for 'Elizabeth Loftus: The fiction of memory'.

STRENGTHEN YOUR LEARNING

1. What is the difference between proactive and retroactive interference? Give an example of each.
2. Explain the technique by which interference is usually studied (hint: word pairs).
3. Detail the procedure and findings of Schmidt *et al.*'s 2000 study into interference.
4. What is the difference between context-dependent forgetting and state-dependent learning?
5. Explain the technique by which retrieval failure is usually investigated.
6. Why is cue-dependent forgetting a better explanation of forgetting than interference?
7. Explain what is meant by:
   - (i) trace decay
   - (ii) displacement
   - (iii) repression.

ASSESSMENT CHECK

1 Best friends Emma and Anneka get very similar scores on their psychology tests. However, recently when Anneka had to sit a test in an unfamiliar classroom, supervised by a teacher she'd never met before, she scored much worse than Emma, who sat the test in her usual classroom supervised by their usual teacher, even though the teacher didn't give her any help.

With reference to retrieval cues, explain why Anneka did worse than Emma in their recent psychology test. **[4 marks]**

2 Outline one explanation for forgetting. **[4 marks]**

3 Outline and evaluate two explanations for forgetting. **[16 marks]**

4 Discuss proactive and retroactive interference as explanations for forgetting. **[12 marks]**

5 Select from the descriptions A, B, C and D to complete the table concerning explanations for forgetting below. One description will be left over. **[3 marks]**

A Forgetting based upon a failure to recover the prompts that trigger recall

B Forgetting due to newly learned information interacting with and impairing the recall of previously learned information

C Forgetting due to not chunking the material into meaningful sections

D Forgetting due to interaction of material learned previously with that attempting to be remembered

Explanation for forgetting	Statement
Retroactive interference	
Absence of retrieval cues	
Proactive interference	

6 To test whether forgetting is due to retrieving information in a different context to that in which it was coded, a researcher reads a list of words to two groups of participants. Twenty minutes later one group recalls the list in the same room, while the other group recalls it in a different room.

Compose a suitable null hypothesis for this experiment. **[2 marks]**

IN THE NEWS

Ψ The Psychological Enquirer

Picking Cotton

Figure 2.30 'I was certain, but I was wrong' – Jennifer Thompson and Ronald Cotton

Back in 1984, college student Jennifer Thompson was confronted by an intruder in her flat. He overpowered her, held a knife across her throat and raped her. During the ordeal Jennifer carefully memorised every detail of his face, determined that if she survived she would ensure he was captured and imprisoned. She went straight to the police and constructed a sketch of the rapist, looking carefully through hundreds of images of facial features to get it absolutely right. A few days later she identified Ronald Cotton as the attacker. She was certain it was him and picked him out again at a police identity parade. On the strength of Jennifer's eyewitness testimony (EWT) Ronald was convicted and sent to jail – she said it was the happiest day of her life and she was so convinced of his guilt that she wanted him electrocuted, desiring to flip the switch herself.

But Ronald Cotton was innocent. Eleven years later in 1995 DNA samples proved it was another man that had committed the crime. Ronald was released from prison and Jennifer begged his forgiveness, which Ronald gave. The two have become close friends and given lectures on the unreliability of EWT. Unfortunately this wasn't an isolated case and there is a high probability that innocent people have been executed on the strength of false EWT. The Innocence Project in the USA has led to 214 men convicted of crimes they didn't commit due to false EWT being released. Ronald and Jennifer have written a book, *Picking Cotton*, about their experience, which illustrates the serious implications, especially in courts of law, for this area of psychology.

ON THE WEB

You can read a fuller account of Jennifer Thompson and Ronald Cotton's incredible story at:

http://faculty.washington.edu/gloftus/Other_Information/Legal_Stuff/Articles/News_Articles/Thompson_NYT_6_18_2000.html

Or for a video of a lecture Jennifer gave in Bristol about her ordeal, for the Innocence Project in 2012, search YouTube for 'Jennifer Thompson: Innocence and Forgiveness'.

KEY TERMS

Eyewitness testimony (EWT) – evidence provided by those recalling an event who were present when the event took place

Schema – a readiness to interpret sensory information in a pre-set manner

'There are lots of people who mistake their imagination for their memory.'
Josh Billings (1860)

'Memory is a complicated thing, related to truth, but not its twin.'
Barbara Kingsolver (2002)

Eyewitness testimony (EWT)

The guilt or innocence of people being tried in courts of law often depends upon the accuracy of the memories of eyewitnesses. Jurors often find **eyewitness testimony (EWT)** vitally important in making their decision and yet in 75 per cent of cases where individuals have been found by DNA evidence to have been wrongly convicted, the original guilty verdict was based on inaccurate EWT. Research into EWT is therefore vital, as it helps further understanding of how memory works, especially as to how inaccurate memories can be created, which then helps form practical applications as to how court cases should be conducted and how witness statements should be gathered – for instance, courts cannot convict an accused person on the basis of one uncorroborated eyewitness statement.

The influence of schema

Bartlett (1932) stated that memories aren't accurate 'snapshots' of events, but are 'reconstructions' of events, influenced by active **schemas**, ready-made

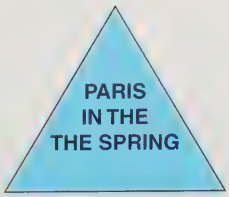


Figure 2.31 Schema involves seeing or remembering what you expect to see or remember: for example, here many people will see 'Paris in the Spring' (even though it doesn't state this) as that's what they expect to see

expectations based on previous experiences, moods, existing knowledge, contexts, attitudes and stereotypes. Schemas are used to make sense of the world, by 'filling in the gaps' in our knowledge and by simplifying the processing of information. This affects the reliability of EWT, because witnesses aren't merely recalling facts as they happened, instead they're reconstructing memories that are biased by schemas active at the time of recall, which can lead to false memories.

Research

Bartlett (1932) found that when Western cultural participants were told a Navajo Indian story, 'The War of the Ghosts', that didn't make sense from their cultural viewpoint, their memory of the story became distorted, with details of the story being changed to fit a Western cultural viewpoint. This illustrates how memory can be affected by cultural schemas, perceptions of what happened from a particular cultural viewpoint.

YOU ARE THE RESEARCHER

Design a study based on Bartlett's 'The War of the Ghosts' to investigate how schema can affect recall. You'll need to write a story that has no clear plot. Create some opportunities for participants to change the story using schemas. For example, you could include a librarian who likes to go out clubbing and a racing car driver who is shy and retiring, as the librarian may then get recalled as shy and retiring, as that fits the typical view of librarians.

You'll need about eight participants. Only tell the story to the first participant, who then tells it to the second participant and so on. The last participant writes down what they recall. How would you record and analyse data?

For information on research methods, see Chapter 7.

2.5 Factors affecting the accuracy of eyewitness testimony (EWT)

Several factors have been identified as affecting the accuracy of eyewitness testimony (EWT); misleading information, in the form of leading questions and post-event discussion, will be featured here, along with anxiety factors.

KEY TERMS

Misleading information – information that suggests a desired response

Leading questions – questions that prompt or encourage required responses

Post-event discussion – information added to a memory after the event has occurred

Misleading information

Research regularly shows that EWT is affected by experiences occurring after a witnessed event. A key factor is the use of **misleading information**, particularly in the form of **leading questions** and **post-event discussion**. For instance, most people will have seen TV dramas set in courtrooms where barristers are accused of 'leading the witness' by asking questions that suggest a certain answer. Misleading information has been found to be more able to create false memories the more believable, emotionally arousing and subtle it is.

Leading questions are questions that increase the likelihood that an individual's schemas will influence them to give a desired answer.

Post-event discussion concerns misleading information being added to a memory after the event has occurred, with research indicating that false memories can be stimulated by misleading post-event experiences.

CLASSIC RESEARCH

Reconstruction of automobile destruction: an example of the interaction between language and memory – Elizabeth Loftus & John Palmer (1974)

Elizabeth Loftus would go on to forge a career based around research into EWT and the formation of false memories. In this early study she found that participants' memories of important details of an event witnessed on video could be influenced by the use of misleading questions.

Aim

To assess the extent to which participants' estimates of the speed of cars involved in accidents witnessed on video could be influenced by misleading questions.

Procedure

1 **Experiment one:** 45 university students were each shown 7 video clips of car crashes. After each accident participants wrote an account of what they could recall and answered specific questions, the key question being to estimate the speed of the vehicles. There were 5 conditions (with 9 participants in each condition), with the conditions varying through which verb was used in asking the key question.

Key question: About how fast were the cars going when they ..... each other?

The blank space was filled with either 'contacted', 'hit', 'bumped', 'collided' or 'smashed'.

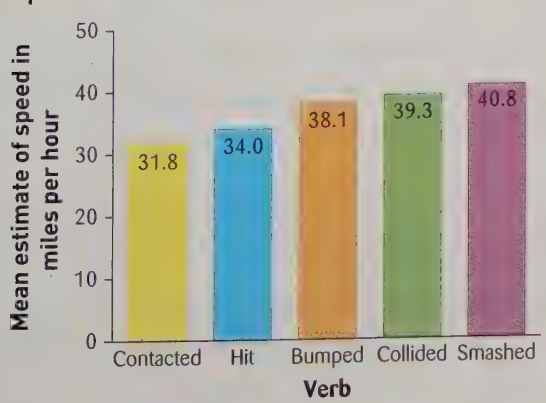
Participants' estimations of speed were then recorded.

2 **Experiment two:** 150 student participants viewed a video of a car crash. 50 were asked the key question with the word 'smashed' in it, 50 with the word 'hit' and a control group of 50 weren't asked at all. One week later they were questioned about their memory of the event, with the key question being 'Did you see any broken glass?' (There wasn't any.)

The number of participants who recalled broken glass was then recorded.

Findings

Experiment one:



As the intensity of the verb used in the key question increased, so did the estimation of the speed of the cars.

Experiment two:

Answer	Control condition	Hit condition	Smashed condition
Yes	6	7	16
No	44	43	34

Participants were twice as likely in the 'smashed' condition to recall the false memory of broken glass.

Conclusions

Experiment one showed that misleading information in the form of leading questions can affect memory recall of eyewitnesses.

Experiment two showed that misleading information in the form of post-event information can also affect memory recall of eyewitnesses.

Both studies suggest that at recall misleading information is reconstructed with material from the original memory.

Evaluation

The study is a laboratory experiment centred on an artificial task (watching videos) and as such lacks relevance to real-life scenarios. Witnessing real car crashes would have much more of an emotional impact and thus would affect recall differently.

The results may be due to demand characteristics, rather than genuine changes in memory; participants may have just given the answer they thought the researchers wanted, as suggested by which verb they heard in the key question.

RESEARCH IN FOCUS

1 A limitation of Loftus & Palmer's 1974 study is that demand characteristics may have caused the results. What are demand characteristics and how may they have occurred here?

2 How might including 'filler' questions as well as the 'key question' help reduce demand characteristics?

For information on research methods, see Chapter 7.

Research

Loftus (1975) found that 17 per cent of participants who watched a video of a car ride and were asked 'how fast was the car going when it passed the white barn?' (when there was no barn) recalled seeing a barn a week later, which supports the idea that post-event information added to a memory after the event has occurred, can affect recall.

Bekerian & Bowers (1983) showed slides of events leading up to a car crash, finding that participants' memories remained intact despite being asked leading questions, which suggests that post-event information affects the retrieval of memories rather than their storage.

Figure 2.32 Loftus & Pickrell planted false memories of being lost as a child into participants' memories. In another study they got people to remember meeting Bugs Bunny at Disneyland

Loftus & Pickrell (1995) gave 24 participants aged 18–53 four stories about their childhoods provided by relatives; three of the stories were true, but one was false, involving being lost in a department store aged five then rescued by an elderly lady before being returned to their family. Participants were then asked what they could remember of these incidents and to report 'I do not remember this' if they had no recollection of an event. 68 per cent of true incidents were recalled and 29 per cent of the false ones, with details and clarity of false memories being lower than for true ones. The findings imply that false memories can be created from suggestion.

Tomes & Katz (1997) found individuals who identify with others' moods, score highly on measures of imagery vividness and have poor recall are more affected by misleading questions, implying personality factors influence EWT.

CONTEMPORARY RESEARCH

Make my memory: How advertising can change our memories of the past – Loftus & Pickrell (2003)

Figure 2.33 Elizabeth Loftus

Inspired by their earlier success in creating false memories in individuals of being lost as a child in a shopping mall, Elizabeth Loftus and Jacqueline Pickrell were motivated to perform several studies centring on childhood memories of visits to Disneyland, an emotional experience that would presumably be remembered clearly. In this particular study the researchers showed how both verbal and pictorial suggestions created false memories of meeting Bugs Bunny at Disneyland – an impossibility, as he's a Warner Brothers character.

Aims

- To see whether false memories could be created through the use of suggestion.
- To investigate whether autobiographical advertising can make memories become more consistent with images evoked in advertising.

Procedure

120 students who had visited Disneyland in childhood were divided into four groups and instructed to evaluate advertising copy, fill out questionnaires and answer questions about a trip to Disneyland.

Group 1 read a fake Disneyland advert featuring no cartoon characters.

Group 2 read the fake advert featuring no cartoon characters and were exposed to a cardboard figure of Bugs Bunny placed in the interview room.

Group 3 read the fake Disneyland advert featuring Bugs Bunny.

Group 4 read the fake advert featuring Bugs Bunny and saw the cardboard figure of Bugs Bunny.

Findings

30 per cent of participants in group 3 and 40 per cent of participants in group 4 remembered or knew they'd met Bugs Bunny when visiting Disneyland.

A ripple effect occurred whereby those exposed to misleading information concerning Bugs Bunny were more likely to relate

Bugs Bunny to other things at Disneyland not suggested in the ad, such as seeing Bugs and Mickey Mouse together.

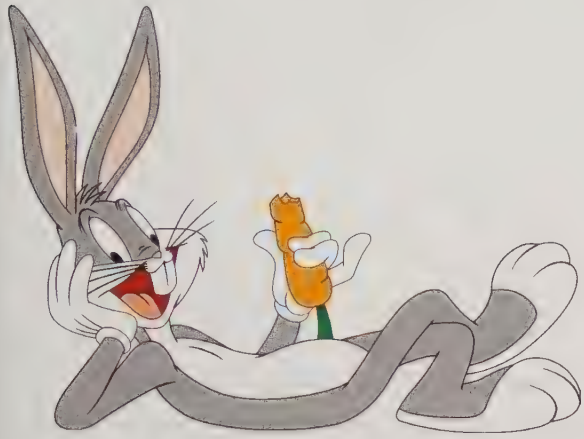


Figure 2.34 This image of Bugs Bunny was used in the fake advert

Conclusions

Through the use of post-event information, false memories can be created.

Both verbal and pictorial suggestions can contribute to false memories.

Memory is changeable and vulnerable to inaccuracy.

Evaluation

The study can be considered superior to Loftus' famous study of car crashes, as it uses memory of a real-life event rather than something watched on video.

The study shows the power of subtle association changes on memory.

A practical application is that of advertisers using nostalgic images to manufacture false positive memories of their products.

Evaluation

- The consequences of inaccurate memories are minimal in research settings compared to real-life incidents. Foster *et al.* (1994) showed EWT was more accurate for real-life crimes as opposed to simulations.
- Participants don't expect to be deliberately misled by researchers; therefore inaccurate recall should perhaps be expected since participants believe the researchers to be telling the truth.
- Misleading information often affects only unimportant aspects of memory. Memory for important events isn't as easily distorted when the information is obviously misleading. Subtle and plausible misleading information is much more influential.
- Studies of EWT that use potentially distressing stimuli bring ethical concerns of psychological harm. For instance, care should be taken not to include participants who may have experienced traumatic car accidents. Many studies of EWT also involve elements of deceit.
- Whether advertisers should be allowed to use techniques that deliberately try to create positive false memories of products so that people will buy them is debatable, as it could be argued to be a form of lying.

Anxiety

KEY TERM

Anxiety – an unpleasant state of emotional arousal that can affect the memory of events experienced

A main criticism of EWT research is that it often uses artificial scenarios that have no emotional involvement for witnesses. Real-life events, however, such as violent crimes, often have a high **anxiety** content that can greatly affect recall. One area of special interest is the degree to which anxiety might divert attention away from the important aspects of an event being witnessed. Loftus *et al.* (1987) argued for a 'weapons effect', whereby witnesses to violent crimes focus on the weapon being used, rather than the culprit's face, negatively affecting the ability to recall important details. Psychologists have performed lots of research, using both laboratory studies and real-life events, to identify the ways in which anxiety affects EWT.

The Yerkes-Dodson inverted-U hypothesis (IUH)

Deffenbacher (1983) used the IUH (originally a description of the relationship between arousal and performance) to explain how anxiety levels affect the accuracy of recall of events experienced. The IUH sees moderate amounts of anxiety as improving the detail and accuracy of memory recall up to an optimal (best) point, after which further increases in anxiety lead to a decline in the detail and accuracy of recall. The findings of research have been used to investigate whether this is true, though it is difficult to reach any firm conclusions.

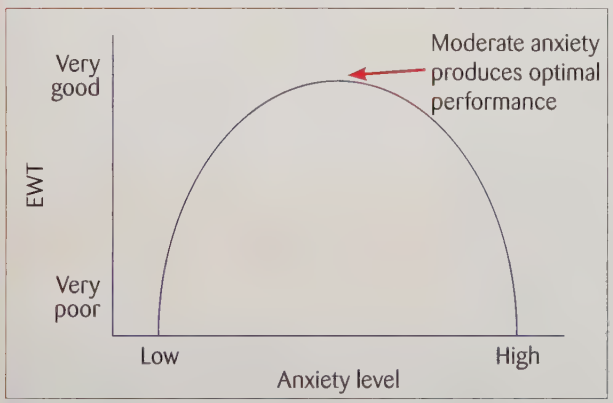


Figure 2.35 The Yerkes-Dodson inverted-U hypothesis

Repression

(See Explanations for forgetting, page 76.) Repression has also been offered up as an explanation of how anxiety can affect the accuracy of recall. Freud (1894) argued that anxiety hinders the recall of memories, as he saw forgetting as being motivated by the traumatic content of memories. Access to memories would be barred, so as to protect individuals from the emotional distress they would cause. Research evidence is not without criticism and some would argue whether the concept actually exists in reality.

Research

Loftus *et al.* (1987) found that if a person is carrying a weapon, then witnesses focus on the weapon rather than the person's face, negatively affecting their ability to recall facial details of armed criminals, supporting the idea that anxiety can divert attention from important features of a situation in line with the weapons effect.

Deffenbacher (1983) performed a meta-analysis of 21 studies examining the role of anxiety in the accuracy of EWT, finding heightened anxiety tended to negatively affect the memory of eyewitnesses. This again suggests that anxiety can divert attention away from important features of a situation. However, Christianson & Hubinette (1993) studied the recall of witnesses to real bank robberies, finding contradictory evidence, in that increased arousal led to improvements in the accuracy of recall, suggesting that anxiety-creating situations don't always divert attention from important features of a situation.

Research

Ginet & Verkampt (2007) produced moderate anxiety in participants by telling them fake electrodes attached to them would give electric shocks. Their recall of minor details of a traffic accident viewed on video was superior to participants with lower anxiety produced by being told the fake electrodes were purely for recording purposes. This implies moderate anxiety does increase EWT in line with the IUH. Peters (1988) provided further support by testing people attending their local health clinic for an injection. During the visit, they met a nurse, who gave them the injection, and a researcher for equal periods of time. Later on, using photographs, the researcher proved easier to recognise than the nurse, suggesting the heightened anxiety levels due to the injection led to a decrease in memory accuracy.

Oue *et al.* (2001) found that participants who were anxious from viewing emotionally negative events recalled fewer details from the edge of a scene than participants witnessing emotionally neutral events; this suggests anxiety reduces witnesses' fields of view.

Koehler *et al.* (2002) found participants were less able to recall stressful words than non-stressful words, lending support to Freud's concept of repression. However, Hadley & MacKay (2006) found stressful words were better recalled, as they were more memorable, suggesting repression may occur in some instances, but not always. (Other research on repression can be found on page 82.)

Figure 2.36 Witnessing a real-life incident often has much more emotional impact than a laboratory study

Evaluation

- Much research into anxiety and EWT is laboratory based, so do findings generalise to real-life scenarios? Yuille & Cutshall (1986) investigated the anxiety levels and accuracy of recall of thirteen witnesses to a fatal shooting in Vancouver, Canada, finding those with high anxiety had less accurate recall than those with lower levels, but those witnesses with very high anxiety had extremely accurate recall, which casts doubt on the inverted-U hypothesis, as those with very high anxiety should have shown less accurate recall. However, Fruzetti *et al.* (1992) point out that those with the highest levels of anxiety were actually closer to events and this might have helped their accuracy recall.
- Deffenbacher (2004) reviewed his earlier findings and found them over-simplistic. He performed a meta-analysis of 63 studies, finding that EWT performance increased gradually up to extremely high levels of anxiety, after which there was a catastrophic drop in performance with a negative impact on both accuracy of eyewitness identification and accuracy of recall of crime-related details. This supports an amended version of the IUH known as catastrophe theory.
- Care must be taken with studies of anxiety and EWT as, by their very nature, such studies could produce potentially high levels of psychological harm.
- Other factors could have a mediating effect on how anxiety affects the accuracy of memory recall; for instance, research indicates that age can have an effect on EWT accuracy and as individuals react differently to anxiety-creating situations it is highly possible that personality factors would play a mediating role too.

2.6 Improving the accuracy of eyewitness testimony

'I have a memory like an elephant, indeed elephants often consult me.'
Noel Coward (1959)

What psychologists have learned about the nature of memory and forgetting can be applied to the development of techniques that aid memory recall, either in everyday scenarios, or in specific situations, such as when interviewing witnesses to serious crimes. The general aim is to increase the accuracy of memories and the amount of accurate detail produced.

The cognitive interview (CI)

Table 2.2 Components of the cognitive interview

Component	Description
Change of narrative order	Recall the event in different chronological orders, e.g. from end to beginning
Change of perspective	Recall the event from different people's perspectives, e.g. from the offender's point of view
Mental reinstatement of context	Recall both the environmental and emotional context of the event, e.g. weather and personal feelings
Report everything	Recall all information, even that which seemingly has little relevance or that which is remembered less confidently or seems incomplete

KEY TERMS

Improving the accuracy of eyewitness testimony – the means by which the retrieval of events experienced can be improved

Cognitive interview (CI) – a procedure for police questioning of witnesses that promotes accurate, detailed recall of events

The **cognitive interview (CI)** was developed by Fisher & Geiselman (1992) and is a series of memory retrieval and communication techniques designed to improve recall in police interviews. It is based on Tulving's (1974) idea that there are several retrieval paths to each memory and information not available through one pathway may be accessible through another.

Two such pathways are the 'change of narrative order' and 'change of perspective' components of the CI, which encourage interviewees to recall events in a variety of orders and different perspectives (viewpoints).

The CI also involves Tulving & Thomson's Encoding Specificity theory (1973), which suggests memory traces are made up of several features and, to enhance recall, as many retrieval cues as possible should be used. Context provides cues that increase feature overlap between initial witnessing and subsequent retrieval contexts. 'Context reinstatement' involves emotional elements of an event witnessed, i.e. how an individual was feeling, which work via state-dependent effects, for example returning to the scene of the crime and picturing how it smelt, what could be heard, etc. and sequencing elements, like what you were doing at the time. The final element, 'reporting everything', works on the basis that even seemingly trivial details can trigger more important memories.

The 'change of narrative order' and 'change of perspective' strategies are believed to aid recall because they reduce witnesses' use of prior knowledge, expectations and schemas, increasing witness accuracy.

Research

Geiselman *et al.* (1985) found that the CI procedure produced more accurate, detailed memories than the **standard police interview (SPI)** technique and interviews conducted under hypnosis, suggesting the technique is relatively effective.

Geiselman & Fisher (1997) found that the CI works best when used within a short time following a crime rather than a long time afterwards, suggesting recall is enhanced best when CIs are conducted immediately after an incident has occurred.

Kohnken *et al.* (1999) conducted a meta-analysis of 55 studies comparing CI to a **SPI**, finding CIs produced more accurate detail, but also more inaccurate detail. No age differences were found, but recall was enhanced when witnesses were personally involved in the event being witnessed. The amount of correct detail produced seemed to decline the longer a CI was conducted after an event had occurred. This suggests the CI is relatively effective, but should be conducted immediately after an event and ways of reducing the production of inaccurate information need to be explored.

Milne & Bull (2002) found the 'report everything' and 'context reinstatement' components of the CI to be the key techniques in gaining accurate, detailed recall, which suggests modified versions of the CI should concentrate on these features.

ON THE WEB

For a 10-minute video on how a cognitive interview is conducted, search YouTube for 'Example of Cognitive Interview'.

KEY TERMS

Standard police interview (SPI) – the established method of police questioning

Enhanced cognitive interview (ECI) – an advanced method of questioning witnesses that overcomes problems caused by inappropriate sequencing of questions

The enhanced cognitive interview (ECI)

Fisher & Geiselman (1987) suggested an amended version of the CI known as the **enhanced cognitive interview (ECI)** that seeks to build a trusting relationship between interviewer and witness and improve the quality of communication between the two.

Important extra features of the ECI include:

- the interviewer not distracting the witness with unnecessary interruptions/questions
- the witness controlling the flow of information
- asking open-ended questions
- getting the witness to speak slowly
- participants being reminded not to guess and to use the 'don't know' option when necessary, in order to reduce confabulations (false memories)
- reducing anxiety in witnesses.

The ECI starts by getting the witness to control the flow of information through asking them open-ended questions on neutral topics. The next stage then involves context reinstatement, followed by the witness's free recall of events. During this time the interviewer stresses the importance of 'report everything' and not guessing if details are unknown. The interviewer then moves on to asking about the information recalled using focused memory techniques that involve asking the witness to concentrate on mental images of the memory, such as a person's face and using these to guide recall. The idea here is that details are most retrievable when they are perceptually related to the witness's mental image and so interviewers should time their questions accordingly.

Figure 2.37 The modified cognitive interview is often used to allow police officers to interview children

KEY TERMS

Modified cognitive interview (MCI) – an amended form of the CI

Modified versions of the CI and ECI have been produced for different reasons. Holliday (2003) produced a **modified cognitive interview (MCI)** suitable for use with children, which stresses building a trusting relationship between interviewer and witness, gives control to the witness and removes the 'change perspective' component, as children are seen as being too young to effectively empathise with others (see things from another's point of view). Other MCIs are shortened versions, as many police forces have found that the CI and ECI take more time than they have available. These generally omit the 'change narrative order' and 'change perspective' components. There's also the self-administered interview, based on the cognitive interview, used when there are multiple witnesses to an incident and recollections need to be collected quickly to prevent information loss.

Research

Fisher *et al.* (1989) assessed the performance of police officers in gathering facts when using the ECI compared to a SPI, finding the ECI to be superior.

Coker (2013) found that an ECI technique that stressed the use of focused mental imagery produced increased accurate detail in comparison to the CI technique, especially concerning personal details of people being recalled, and that this effect was greater if the ECI took place one week after an event rather than immediately afterwards. This suggests the ECI is an improvement on the CI, but that the timing of when an interview is conducted is vital to its success.

Horry *et al.* (2019) used the self-administered interview to get witnesses to traffic accidents to recall everything they remembered about a sequence of events, including descriptions of drivers, details of their behaviour, driving conditions and consequences of a collision, as well as a sketch of the accident. The technique improved accuracy of recall by 49 per cent and it is hoped will increase convictions for dangerous driving that cause serious injury, which have previously occurred in less than 60 per cent of cases. Better evidence means a higher likelihood of successful prosecutions against dangerous drivers.

Verkampt & Ginet (2010) interviewed 229 children after a painting session, with either a CI, a SPI or one of four types of MCI, finding that the CI and MCIs were all superior to the SPI in producing accurate detail and that versions of the MCI that removed the 'change narrative order' component were superior, which supports the idea that MCIs are beneficial for specific types of witnesses.

Evaluation

- Although the CI was primarily designed for use by police interviewers, its success has led to calls for it to be more widely used by other organisations and in situations where accuracy of memory recall is important.
- Although the ECI has proved a more effective technique, it's also more prone to producing confabulations, where incorrect items are recalled.
- As the CI is composed of several techniques, it makes working out which are the most effective components difficult.

- Comparison of CIs with SPIs isn't easy, as police interview techniques other than the CI are not standard, but actually use a lot of different techniques, for instance just asking 'what can you recall' or asking specific questions.
- A practical problem with the CI is it's time-consuming, often requiring more time than officers have operational time for. Also, Memon *et al.* (1993) report that officers believe the 'change of perspective' component misleads witnesses into speculating about the event witnessed and due to this concern it's less frequently used.

One limitation of cognitive interviews is that they are not generally effective as a form of memory-enhancement with regards to the recognition of suspects in identity parades and photographs.

The development of MCIs means groups of witnesses, such as children and those with learning difficulties, can be interviewed effectively; 45 per cent of MCIs are designed for use with children.

RESEARCH IN FOCUS

1 Fisher *et al.*'s 1989 study got police officers to compare the effectiveness of the CI against the SPI using a field experiment. How does a field experiment differ from:
   (i) a laboratory experiment
   (ii) a natural experiment?
2 Why do field experiments have more ecological validity than laboratory experiments?
3 How can field experiments reduce participant reactivity?
4 Why might a field experiment have less causality than a laboratory experiment?

For information on research methods, see Chapter 7.

CONTEMPORARY RESEARCH

The Cognitive Interview: A meta-analytic review and study space analysis of the past 25 years – Amina Memon, Christian Meissner & Joanne Fraser (2010)

Figure 2.38 How successful has the cognitive interview technique been?

Amina Memon and colleagues decided to commemorate the 25th anniversary since the introduction of the cognitive interview, by conducting a meta-analysis of studies into the effectiveness of the technique. They included studies used in the last major meta-analysis by Kohnken *et al.* (1999), as well as more recent ones, including those featuring the more recent modified cognitive interview, an amendment of the ECI.

Aims

- To assess the effectiveness of the CI over a 25-year period as a vehicle for producing accurate, detailed information in the standard police interviewing (SPI) of witnesses.
- To see if the findings of the last major meta-analysis could be replicated to check their validity.

Procedure

1 57 studies (involving 65 experiments) to include in the meta-analysis were found through the online databases PsycARTICLES and PsycINFO and also by contacting researchers in the field. All research had to involve experimental studies of the CI in comparison to a control or other interview technique, as well as being studies published, or accepted for publishing, in peer-reviewed journals.

2 64 per cent of the studies involved young adult witnesses, 28 per cent involved children, 8 per cent elderly people and 6 per cent people with learning disabilities.

3 32 per cent of the studies used the CI, 23 per cent the ECI and 45 per cent versions of the MCI.

Findings

1 The CI was seen to produce significantly more accurate detail than non-CI comparison techniques and the size of this effect was greater than that found by Kohnken *et al.* (1999). The effect was less evident with children, but more evident with the elderly people in comparison to young adults.

2 As with the previous meta-analysis, a small but significant increase in inaccurate details was found between the CI and comparison techniques. The effect was less evident with children and at the same level for elderly people in comparison to young adults.

3 The CI and non-CI methods were seen as not to differ in the amount of confabulations (false memories) that they produced. The MCI, though, did produce slightly more confabulations.

4 The MCI produced significantly more inaccurate details than the CI and ECI, but there were no significant differences between all types in terms of the amount of accurate detail produced.

Conclusions

CIs are producing more accurate, detailed information than before, but also more inaccurate detail, with no differences in the amount of confabulated memories. These effects are more greatly evident among young adults and elderly people.

The CI and ECI seem superior in terms of the lesser amount of inaccurate detail produced compared to the MCI and the lesser number of confabulations produced.

The CI is an effective manner of conducting interviews in comparison to SPI techniques.

Evaluation

Although MCIs perform less well than the CI and the ECI, they are superior to the SPI procedure and may be more practical for police services to use in terms of time and cost–benefit considerations. The police don't always have the time or manpower to conduct full versions of the CI.

Increases in confabulations with the MCI may be due to interviewers overlooking a key component of the ECI: that witnesses shouldn't guess if they are unsure.

Several important factors have not been considered in the meta-analysis, such as how long after an event has occurred was an interview conducted, the number of times a witness was questioned and the degree of emotional involvement a witness had. All of these could have had large mediating effects.

RESEARCH IN FOCUS

1 Memon *et al.*'s 2010 study is an example of a meta-analysis. How is a meta-analysis conducted?
2 What is the main advantage of carrying out a meta-analysis?
3 What weaknesses of the method are there?

For information on research methods, see Chapter 7.

KEY TERMS

Mnemonics – techniques that promote memory recall

Active processing – subjecting information to deep and meaningful analysis

INCREASE YOUR KNOWLEDGE

Two other methods of increasing the accuracy of memory recall are **mnemonics** and **active processing.** Both techniques can be used to improve general recall or to facilitate recall in specific situations, such as being an eyewitness to a serious incident.

Mnemonics

Mnemonics are techniques that aid memory recall by the organisation of information. They work by developing links to existing memories in storage, so that retrieval of a familiar item leads to the recall of less familiar items. One proven method is to impose a common structure upon the material to be recalled.

Visual imagery mnemonics focus on visual images, for example a familiar route through the rooms of your house, whereby objects to be recalled are placed in each room. These objects are visualised within their visual settings and recall is aided by individuals imagining taking the familiar route.

Baltes & Kleigl (1992) found that older adults should use verbal mnemonics rather than visual ones, as they increasingly find it harder to produce and recall visual images. This suggests the ability to use different forms of mnemonics changes throughout an individual's life. Herrmann (1987) found interactive imagery, where two items are linked together, either visually or verbally, to be the most effective strategy, but the verbal mnemonic of creating a narrative story is most effective for recalling lists of items in any order. This implies different mnemonic techniques are more effective with particular types of memory tasks.

Evaluation of mnemonics

People differ in their abilities to visualise, and therefore the usefulness of visual imagery is dependent on how much an individual is a 'high-imager' or a 'low-imager'.

Visual imagery mnemonics often only work when trying to learn and recall actual objects rather than abstract concepts and ideas and so are not a universal means of improving memory.

Active processing

Active processing concerns procedures where learners go beyond mere passive, unthinking encoding of information and instead subject material to deep and meaningful processing. The deeper and more meaningful the processing, the better recall will be.

Craik & Lockhart (1972) found that if participants analysed material by meaning (semantics), recall was better, suggesting semantic processing draws upon many varied links between items in LTM, recall becoming easier as more recall pathways are created.

Arsenal	0	vs	Port Vale	6
Manchester United	0	vs	Accrington Stanley	4
Exeter City	2	vs	Plymouth	1
Dagenham & Redbridge	3	vs	Barnet	0
Inverness CT	1	vs	Ross County	5

Figure 2.39 Active processing helps football fans to remember scores, for example by comparing scores to expected ones

Morris *et al.* (1985) found that football fans recalled more actual scores than non-fans, as they actively processed the information, for example comparing scores to expected ones and calculating the impact upon league positions. This suggests active processing is a useful strategy for memory improvement.

Evaluation of active processing

Active processing is a circular concept (proves itself). Not only is strongly processed information recalled better, but also information that's well recalled has been actively processed. This makes the concept untestable and non-scientific.

Active processing is a dynamic theory, seeing memory as a process, not a set of passive stores. It provides meaningful associations between memory and other cognitive areas, such as perception, language, etc.

STRENGTHEN YOUR LEARNING

1 Explain how schema can affect eyewitness testimony (EWT).
2 What is meant by:
   (i) leading questions
   (ii) post-event information?
3 Explain:
   (i) how in Loftus & Palmer's 1974 study of EWT demand characteristics may have affected the results
   (ii) what the main limitation of the study is.
4 How does Loftus & Pickrell's 2003 study of EWT suggest that advertisers can create false memories?
5 (i) How can the inverted 'U' hypothesis be used to explain the relationship between anxiety and memory?
   (ii) Does research suggest this is true?
6 Name and describe the four components of the CI.
7 What is the difference between the CI, ECI and MCI?
8 What does Memon *et al.*'s 2010 study suggest about the effectiveness of all types of cognitive interviews?
9 Explain what is meant by:
   (i) mnemonics
   (ii) active processing.

ASSESSMENT CHECK

1 Roland has been in court accused of causing a car crash by driving too fast. Witnesses to the crash questioned by the lawyer defending Roland recalled Roland driving at a lower speed than those witnesses questioned by the prosecuting lawyer.

Explain by reference to factors affecting the accuracy of eyewitness testimony why witnesses to Roland's car crash recalled him driving at different speeds. **[4 marks]**

2 Explain how anxiety can affect the accuracy of EWT. **[4 marks]**

3 Outline and evaluate how misleading information can affect the accuracy of EWT. **[16 marks]**

4 Discuss the use of the cognitive interview as a means of improving the accuracy of eyewitness testimony. **[12 marks]**

5 Following the recent tiddlywinks contest between the Dexterous Digits and the Knotted Knuckles there was a mass brawl between rival fans outside the tiddlywinks arena. Police interviewed witnesses by asking them what they could recall of the incident, but little of value was remembered.

Explain how police officers could possibly have gained more accurate and detailed information from the witnesses by using a cognitive interview. **[4 marks]**

6 The following are procedures of a cognitive interview:

A Change of narrative order

B Mental reinstatement of context

C Report everything

D Change of perspective

In the table below insert which procedure, A, B, C or D, fits which description. One description will be left over. **[3 marks]**

Type of procedure	Description
	Recounting the scene in different chronological orders
	Recalling the scene as written bullet points
	Returning to the environmental and emotional context of the crime scene
	Recounting the scene from different perspectives
	Recalling all information, even if it appears to have little relevance or is accorded a lower level of confidence

SUMMARY

Explanations of memory

- The MSM explains how information flows between the three storage systems of SR, STM and LTM.
- Memory stores within the STM differ in terms of coding, capacity and duration and the model is supported by research studies that illustrate these differences.
- The WMM is an explanation of STM that sees it as an active store holding several pieces of information simultaneously being worked on.
- The WMM has at its head the CE along with the three slave systems of PL, VSS and CE, with research supporting the idea that different tasks can be done simultaneously if they use different slave systems.

Types of long-term memory

- LTM divides into the explicit types of episodic and semantic memory and the implicit type of procedural memory.
- Different types of LTM seem to perform separate tasks and are generally associated with different brain areas from each other.

Explanations for forgetting

- Explanations for forgetting focus on whether information is no longer in storage, or cannot be retrieved from storage.
- Interference sees newly-learned information interacting with, and impairing, the recall of previously learned information, with two apparent types: proactive and retroactive.
- Cue-dependent failure sees recall as dependent upon finding the correct retrieval cues.
- Other forms of forgetting include trace decay and displacement for STM, and trace decay and repression for LTM.

Factors affecting the accuracy of eyewitness testimony

- Memories are reconstructions based on schemas, with the accuracy of EWT dependent upon several factors, such as misleading information in the form of leading questions, post-event information, as well as anxiety levels.
- The CI improved upon the SPI to produce greater accurate detail in police interviews, and is based upon the idea of using several retrieval paths to a memory.
- The ECI and the MCI are adaptations of the CI, designed to improve its effectiveness and usage with different types of people.
- Other ways of improving the accuracy of recall include mnemonics and active processing.

3 Developmental psychology: attachment

Introduction

Developmental psychology studies trends – how people change over time. Developmental influences can be biological (such as through genetics) or environmental (such as through parenting), with often several influences combining together. With much development occurring early in life, focus is often upon childhood and adolescence, like attachment behaviour, which will be concentrated on in this chapter. Focus will especially be upon:

- How attachments form
- Animal studies of attachment
- Types of attachment
- Explanations for attachments
- The consequences of disrupting attachments
- The influence of early attachments upon childhood and adult relationships.

Understanding the specification

- *Caregiver–infant interactions* must be studied as they are specifically listed on the specification, including *reciprocity and interactional synchrony*, as well as *Schaffer's stages of attachment formation*, *multiple attachments* and *the role of the father*.
- You also need to know about *animal studies of attachment*, as they are explicitly listed on the specification, especially those of Lorenz and Harlow.
- Two specific explanations of attachment are listed: *learning theory* and *Bowlby's monotropic theory* (including the concepts of a critical period and an internal working model).
- *Ainsworth's 'Strange Situation'* must be studied as it too is specifically included, with especial focus on types of attachment and cultural variations in attachment, including that of Van Ijzendoorn.
- *Bowlby's maternal deprivation theory* is also listed, along with *Romanian orphan studies* and *the effects of institutionalisation*.
- Final focus is upon *the influence of early attachment on childhood and adult relationships*, again including the role of an *internal working model*.

These are the basic requirements of the specification. However, other relevant material is included to provide depth and detail to your understanding.

IN THE NEWS

Ψ The Psychological Enquirer

The father who went to the ends of the earth for his daughter

Figure 3.1 Princess Emily Heaton, her father Jeremy and the flag of Bir Tawil

Jeremy Heaton, father of three children, can lay claim to be possibly the best dad in the world. Wanting to prove that he would literally go to the ends of the earth for his children, he gave daughter Emily a rather special 7th birthday present. Emily had always wanted to be a princess, so after conducting some research Jeremy discovered that there is an 800 square mile area of arid desert lying between Sudan and Egypt that doesn't officially belong to any country. So on June 16th 2014, Emily's dad made the long journey from the family home in Virginia, USA, to the North African area known to the locals as Bir Tawil and planted the flag he had made to claim the territory for Princess Emily. The delighted princess now wears her royal crown at all times. She is unsure when she will be able to visit her country, but would like it to become a centre for agriculture.

Psychologists have long argued over the role of fathers in parenting children. Some see them merely as sperm donors; others, such as John Bowlby, saw them as minor attachment figures, while some view them as figures of prime importance in the healthy development of children. It is important to know the truth, as figures released by the Office for National Statistics (2012) reveal that 42 per cent of marriages will end in divorce and about 90 per cent of single-parent families are female led with little or no involvement in parenting from biological fathers. Conversely, this means that in 10 per cent of single-parent households, parenting is being performed mainly by males. There are also an increasing number of children being raised by their biological mothers and a stepfather. To gain the truth as to what the role of fathers should be, research needs to be undertaken that is conducted in an unbiased and objective fashion, something that is difficult to achieve when so many people have deeply set views and opinions about this topic.

'The moment a child is born, the mother is also born.'
Rajneesh (1974)

'It goes without saying that you should never have more children than you have car windows.'
Erma Bombeck (1983)

3.1 Caregiver–infant interactions in humans

KEY TERM

Caregiver–infant interactions – the mutual exchanges between caregivers and infants that foster and maintain attachment bonds

Precocial animals are born at a fairly advanced stage of development; for example, horses are able to walk and run around soon after birth. However, humans are *altricial*, born at a relatively early stage of development and so need to form attachment bonds with adults who will protect and nurture them.

An **attachment** is defined as 'an enduring, two-way, emotional tie to a specific other person', normally between a parent and child, which develops in set stages within a fairly set timescale. An attachment can be seen to have developed when an infant shows stranger anxiety (distress in the presence of unknown individuals) and separation protest (distress at the absence of a specific person).

As the attachment bond is not present at birth, let us first examine how such an attachment develops.

Attachment bonds are characterised by an infant's desire to keep close proximity to a particular individual and by the expression of distress if the infant is separated from that person. This particular individual gives an infant a sense of security and is usually the child's mother, though attachments can be provided by anyone who provides such comfort and security.

Interactions between a carer and an infant serve to develop and maintain an attachment bond between them. Even though an infant can't talk at this stage of its development, communication between carer and infant is rich and complex and occurs in several ways:

- **Interactional synchrony** – infants move their bodies in tune with the rhythm of carers' spoken language with the infant's and caregiver's behaviours synchronised because they are moving in the same, or a similar, pattern. This serves to reinforce the attachment bond.
- **Reciprocity** – interactions between carers and infants result in mutual behaviour – for example, a smile from one triggering a smile from the other – with both parties being able to produce responses from each other, which also helps to fortify the attachment bond.
- **Bodily contact** – physical interactions between carer and infant help to form the attachment bond, especially in the period immediately after birth.
- **Mimicking** – infants seem to have an innate ability to imitate carers' facial expressions, which suggests it is a biological device to aid the formation of attachments.
- **Caregiverese** – adults who interact with infants use a modified form of vocal language that is high-pitched, song-like in nature, slow and repetitive. This aids communication between carer and infant and serves to strengthen the attachment bond.

YOU ARE THE RESEARCHER

Caregiverese, interactional synchrony, reciprocity, etc. appear to be early forms of communication that serve to create attachment bonds between carers and infants. Design a study that would suggest whether or not such forms of communication are biological in nature or learned. (**Hint:** see the section on cross-cultural studies on page 124).

For information on research methods, see Chapter 7.

Research

Condon & Sander (1974) analysed frame-by-frame video recordings of infants' movements to find they co-ordinated their actions in sequence with adults' speech to form a kind of turn-taking conversation, supporting the idea of interactional synchrony. Isabella *et al.* (1989) further strengthened the

KEY TERMS

Attachment – a two-way, enduring, emotional tie to a specific other person

Interactional synchrony – the co-ordinated rhythmic exchanges between carer and infant

Reciprocity – the interaction of similar behaviour patterns between carer and infant

Figure 3.2 Interactions between carers and infants help to develop and maintain attachment bonds

notion of interactional synchrony reinforcing attachment bonds, by finding that infants with secure attachments demonstrated more evidence of such behaviour during their first year of life.

Klaus & Kennell (1976) compared mums who had extended physical contact with their babies lasting several hours a day with mums who only had physical contact with their babies during feeding in the three days after birth. One month later the mums with the greater physical contact were found to cuddle their babies more and made greater eye contact with them than the mums with lesser contact and these effects were still noticeable a year later. This suggests that greater physical contact leads to stronger and closer bond formation.

Meltzoff & Moore (1977) found that infants aged 2–3 weeks tended to mimic adults' specific facial expressions and hand movements, supporting the idea that infant mimicry is an innate ability to aid the formation of attachments, especially as it was subsequently seen in infants of less than three days old.

Papousek *et al.* (1991) found that the tendency to use a rising tone to show an infant that it was their turn in the interaction was cross-cultural, as American, Chinese and German mothers all exhibited the behaviour. This suggests that 'caregiverese' is an innate, biological device to facilitate the formation of attachments.

Feldman & Eidelman (2007) reported that reciprocity is seen from three months of age, as interactions become more frequent and infants and carers pay more attention to each other's verbal signals and facial expressions, illustrating the importance of reciprocity in forming attachments.

Evaluation

- A practical application of Klaus & Kennell's findings was that hospitals placed mothers and babies in the same room in the days following birth, rather than the previous practice of rooming them apart, to encourage the formation of attachments.
- Durkin (1995) claimed Klaus & Kennell's findings were due not to increased physical contact, but instead due to the greater attention given to the mothers who were unmarried and poor. However, De Chateau & Wiberg (1984) found the same results with middle-class Swedish mothers, which gives support to Klaus & Kennell.
- 'Caregiverese' has been seen to be used by adults to all infants, not just those they have an attachment with, which suggests that although its usage aids communication between adults and infants it cannot be claimed to specifically help form attachments.
- The fact that interactional synchrony is not found in all cultures weakens support for the idea that it is necessary for attachment formation. Le Vine *et al.* (1994) reported that Kenyan mothers have little physical contact or interactions with their infants, but such infants do have a high proportion of secure attachments.

KEY TERM

Stages of attachment – the phases infants progress through to develop and maintain attachment bonds

Stages of attachment development

Schaffer (1996) showed how the common pattern in the development of infants' attachments could be divided into several distinct stages (see Table 3.1).

Table 3.1 Schaffer's stages of attachment

Stage of attachment development	Descriptive features
Pre-attachment phase (birth to 3 months)	From six weeks of age, infants become attracted to other humans, preferring them to objects and events. This preference is demonstrated by their smiling at people's faces.
Indiscriminate attachment phase (3 to 7/8 months)	Infants begin to discriminate between familiar and unfamiliar people, smiling more at known people, though they will still allow strangers to handle and look after them.
Discriminate attachment phase (7/8 months onwards)	Infants begin to develop specific attachments, staying close to particular people and becoming distressed when separated from them. They avoid unfamiliar people and protest if strangers try to handle them.
Multiple attachments stage (9 months onwards)	Infants form strong emotional ties with other major caregivers, like grandparents, and non-caregivers, like other children. The fear of strangers weakens, but attachment to the mother figure remains strongest.

Multiple attachments

It is not disputed that most children form **multiple attachments**, emotional bonds with several people. But what is disputed is the relative importance of these different attachment figures. John Bowlby (see theory of monotropy, page 116) believed that children had one prime attachment and that although children had attachments to other people, these were of minor importance compared to their main attachment bond. However, Rutter (1995) proposed a model of multiple attachments that saw all attachments as of equal importance, with these attachments combining together to help form a child's internal working model (see page 118).

Multiple attachments are often formed to different people for different purposes – for example, to a mother for loving care and a sibling for playful activities. Other attachments are often formed to grandparents, fathers and childminders.

Figure 3.3 Most children develop multiple attachments to other people, such as grandparents

KEY TERM

Multiple attachments – the formation of emotional bonds with many carers

CLASSIC RESEARCH

The development of social attachments in infancy – Rudi Schaffer & Peggy Emerson (1964)

The researchers, realising that attachments weren't formed at birth, were interested in documenting the process of how attachments formed. To achieve this they studied a group of working-class Glaswegian children and their mothers on a regular basis.

Aims

- To assess whether there was a pattern of attachment formation that was common to all infants.
- To identify and describe the distinct stages by which attachments form.

Procedure

1. A longitudinal study was conducted upon 60 newborn babies and their mothers from Glasgow. Mothers and babies were studied each month for the first year of their lives in their own homes and again at 18 months. Observations were conducted, as well as interviews with the mothers, with questions being asked about whom infants smiled at, whom they responded to, who caused them distress, etc.
2. Attachment was measured in two ways:
   Separation protest – this was assessed through several everyday situations: the infant being left alone in a room, left alone with others, left in their pram outside the house,

left in the pram outside the shops, left in the cot at night, being put down after being held and being passed by while sitting in a chair/cot or pram.

Stranger anxiety – this was assessed by the researcher starting each home visit by approaching the infant to see if this distressed the child.

Findings

1 Most infants started to show separation protest when parted from their attachment figure at 6–8 months, with stranger anxiety being shown around one month later.
2 Strongly attached infants had mothers who responded to their needs quickly and gave more opportunities for interaction. Weakly attached infants had mothers who responded less quickly and gave fewer opportunities for interaction.
3 Most infants went on to develop multiple attachments. At 18 months 87 per cent had at least two attachments, with 31 per cent having five or more attachments.
4 Attachments to different people were of a similar nature, with infants behaving in the same way to different attachment figures.
5 39 per cent of infants' prime attachment was not to the main carer.

Conclusions

There is a pattern of attachment formation common to all infants, which suggests the process is biologically controlled.

Attachments are more easily made with those who display sensitive responsiveness, recognising and responding appropriately to an infant's needs, rather than those spending the most time with a child.

Multiple attachments are the norm and of similar quality, which opposes Bowlby's idea that attachments are a hierarchy of one prime attachment and other minor ones. Schaffer commented that there is nothing to suggest that mothering can't be shared by several people.

Evaluation

Data was collected by direct observation or from the mothers, with both sources prone to bias and inaccuracy.

The study has mundane realism, as it was conducted under everyday conditions, meaning that the conclusions drawn about the formation of attachments can be seen as having high validity.

There were large individual differences in when attachments formed, casting doubt on the process of attachment formation being exclusively biological in nature.

KEY TERMS

Separation protest – the level and degree of emotional distress shown by infants when apart from caregivers

Stranger anxiety – the degree of distress shown by infants when in the presence of unfamiliar persons

Research

Carpenter (1975) presented infants with familiar and unfamiliar voices and faces. Sometimes face and voice would be of the same person and sometimes not. He found that two-week-old babies looked at a face longest when it was the mother's accompanied by her voice and were distressed by the sight of her face accompanied by a different voice. This suggests that babies can recognise and are attracted to their mothers from an early age, contradicting Schaffer & Emerson's belief that initially babies were attracted to any person interacting with them.

Evaluation of multiple attachment

- It can be argued that children with multiple attachments are at an advantage; they are more able to form and conduct social relationships, as they have the experience to do so and if a child loses an attachment figure, it has several others that it can turn to.

RESEARCH IN FOCUS

1 As they cannot talk, research using infants often involves interpreting their behaviour. Why might researcher bias be a problem with such research?
2 What strategies could be used to reduce the risk of researcher bias?
3 Schaffer & Emerson's (1964) study was a longitudinal study. How are longitudinal studies conducted and what do they show?
4 What are the strengths and weaknesses of longitudinal studies?

For information on research methods, see Chapter 7.

The role of the father

'The most important thing a father can do for his children is to love their mother.'
Theodore Hesburg (1973)

'She got her looks from her father. He's a plastic surgeon.'
Groucho Marx (1927)

Traditionally fathers were seen to have played a minor role in the parenting of their children; indeed some argued that males are biologically unsuitable to raise children, a view which research suggests to be incorrect. In the past children were raised mainly by married couples, with the father going out to work to provide resources for his family, while the mother stayed at home to look after her children until they were of school age. But society has changed a lot. It is the norm now for mothers to have a job. According to the Office for National Statistics, in 2013 5.3 million British mothers were in employment, with males comprising nearly 10 per cent of those who care for children while their partner goes out to work. Another interesting statistic is that 9 per cent of British single parents (186,000) are male. Evidently many men are having a much bigger role in parenting than before, but let us examine psychologists' views about fathers and attachment.

Figure 3.4 Do children attach to fathers just as playmates, or can the father fulfil a greater role?

Bowlby believed children have one primary attachment figure, usually the mother, though he conceded that this could in some cases be the father. Some researchers have seen the father less as a caregiver, but more as a playmate, as fathers' play is often more physical, unpredictable and exciting than mothers'. This is an old-fashioned/traditional view that has since been questioned.

Mothers have traditionally been seen, due to their perceived nurturing nature, as more able to show **sensitive responsiveness**, but it seems that males can quickly develop this ability when assuming the position of main care providers.

Several important factors have been identified that affect the relationship between fathers and children:

- **Degree of sensitivity** – more secure attachments to their children are found in fathers who show more sensitivity to children's needs.
- **Type of attachment with own parents** – single-parent fathers tend to form similar attachments with their children to those that they had with their own parents.
- **Marital intimacy** – the degree of intimacy a father has within his relationship with his partner affects the type of attachment he will have with his children.
- **Supportive co-parenting** – the amount of support a father gives to his partner in helping to care for children affects the type of attachment he will have with his children.

KEY TERMS

Role of the father – the extent to which fathers are able to function as caregivers and attachment figures in the development of infants

Sensitive responsiveness – recognising and responding appropriately to infants' needs

Research

Geiger (1996) showed that fathers' play interactions are more exciting and pleasurable than mothers', while mothers are more nurturing and affectionate, which supports the idea of fathers being playmates rather than caregivers. However, Lamb (1987) found that children often prefer

interacting with fathers when in a positive emotional state and thus seeking stimulation (mothers are preferred when children are distressed and seeking comfort). This supports the idea of fathers being preferred as playmates, but only in certain conditions.

Hrdy (1999) reported that fathers are less able than mothers to detect low levels of infant distress, which suggests males are less suitable as prime attachment figures. However, Lamb (1987) found that fathers who become main care providers seem able to quickly develop more sensitivity to children's needs and become a safe base from which to explore, which suggests sensitive responsiveness isn't a biological ability limited to women.

Lucassen *et al.* (2011) performed a meta-analysis of studies involving observations and the Strange Situation technique (see page 120), to find that higher levels of sensitivity were associated with greater levels of infant–father attachment security. This supports the idea that more secure attachments are found in children whose fathers are more sensitive to their children's needs.

Bernier & Miljkovitch (2009) found that single-parent fathers' attachments with children aged 4–6 years were similar to the attachments the fathers had with their own parents. As no such effect was found with married fathers, it suggests continuity of attachments occurs more in fathers who are the main caregivers.

Belsky *et al.* (2009) found that high levels of marital intimacy were related to secure father–infant attachments, and that low levels of marital intimacy were related to insecure father–child attachments. This supports the idea that the closeness of relationships between fathers and partners affects the type of attachment a father has with his children.

Brown *et al.* (2010) assessed attachment patterns in 68 families with infants aged 12–13 months, finding that high levels of supportive co-parenting were related to secure attachment types between infants and fathers, but not between infants and mothers. This suggests that supportive co-parenting is important for fathers in developing positive attachments with their children.

Evaluation

- Children with secure attachments to their fathers go on to have better relationships with peers, fewer problem behaviours and are more able to regulate their emotions; illustrating the positive influence fathers can have on developmental outcomes.
- Some research has suggested that children who grow up without fathers do less well at school and have higher levels of risk taking and aggression, especially in boys. This suggests fathers can help prevent negative developmental outcomes. However, Pedersen (1979) points out that most studies have focused on female single mothers from poor socio-economic backgrounds, so it may be social factors related to poverty that produce these outcomes, not the absence of fathers.
- Fathers are important not just for children, but mothers too. Supportive fathers provide mothers with much needed time away from childcare. This can help reduce stress in mothers, improve self-esteem and ultimately improve the quality of a mother's relationship with her children.

- Although evidence suggests that fathers are as equally able as women to display sensitive responsiveness and form secure attachments with children, society has a long way to catch up. For example, many airline companies will not permit males to sit next to non-related children on aeroplanes, though no such restrictions apply to non-related females.
- When fathers spend more time with their children, the children develop more secure attachments, which suggests the amount of interaction is the important factor. However, it may be that fathers with more sensitivity to their children's needs interact with them more.

YOU ARE THE RESEARCHER

Design a case study to assess the degree of involvement and strength of attachment a father has with his child. Which people would you involve in the study? What methods would you use to generate and analyse your data? What methodological problems might there be with this study?

For information on research methods, see Chapter 7.

STRENGTHEN YOUR LEARNING

1. Define attachment.
2. Outline the different ways in which caregivers and infants interact.
3. At what age does an infant's first attachment generally form?
4. Explain why many children form multiple attachments.
5. Outline the procedure and findings from Schaffer & Emerson's 1964 study. What conclusions can be drawn from the findings?
6. Outline the factors that influence the relationship between fathers and their children.
7. What does research suggest about the role of fathers as attachment figures?

3.2 Animal studies of attachment

'Ask researchers why they experiment on animals, and the answer is: "Because the animals are like us." Ask the researchers why it is morally okay to experiment on animals, and the answer is: "Because the animals are not like us."'

Charles R. Magel (1981)

Much early research into attachments was conducted on animals; indeed John Bowlby, probably the most important psychologist in this area, was highly influenced by such studies in forming his theory of monotropy (see page 116) and his maternal deprivation hypothesis (see page 129), which explains the effects of disrupting attachment bonds. Such studies were often conducted on the basis that there was a biological continuity between humans and animals, so that what was true for animals would also be true for humans. Such studies were also regarded as being more ethical than if performed upon humans.

KEY TERMS

Animal studies of attachment – research conducted on animals that reveals insights into the origins and functions of attachment behaviour in humans

Imprinting – a form of attachment where offspring follow the first large moving object

CLASSIC RESEARCH

Imprinting – Konrad Lorenz (1935)

Even as a small boy Lorenz was intensely interested in animals, amassing a varied collection of them, including insects, dogs, fish, geese and a monkey. He noticed how a duckling transferred its affection to him – an observation that would later lead to his work on **imprinting**, for which he received a Nobel Prize (the most prestigious award in science).

Figure 3.5 Konrad Lorenz imprinted goslings onto himself back in 1935

Aim

To investigate the mechanisms of imprinting where the youngsters follow and form an attachment to the first large moving object that they meet.

Procedure

1 Lorenz (1935) split a large clutch of greylag goose eggs into two batches, one of which was hatched naturally by the mother and the other hatched in an incubator, with Lorenz making sure he was the first moving object the newly hatched goslings encountered. Following behaviour was then recorded.
2 Lorenz then marked all of the goslings, so he could determine whether they were from the naturally hatched batch of eggs or the incubated ones, and placed them under an upturned box. The box was then removed and following behaviour again recorded.

Findings

1 Immediately after birth, the naturally hatched baby goslings followed their mother about, while the incubator hatched goslings followed Lorenz around.
2 When released from the upturned box the naturally hatched goslings went straight to their mother, while the incubated goslings went to Lorenz, showing no bond with their natural mother. These bonds proved to be irreversible; the naturally hatched goslings would only follow their mother and the incubated ones would only follow Lorenz.
3 Lorenz also noted how imprinting would only occur within a brief, set time period of between 4 and 25 hours after hatching.
4 Lorenz subsequently reported on how goslings imprinted onto humans would, as matured adult birds, attempt to mate with humans.

Conclusions

Imprinting is a form of attachment, exhibited mainly by nidifugous birds (ones that leave the nest early), whereby close contact is kept with the first large moving object encountered.

Evaluation

The fact that imprinting is irreversible suggests the ability is under biological control, as learned behaviours can be modified by experience.

The fact that imprinting only occurs within a brief, set time period influenced Bowlby's idea of a critical period in human babies (see page 117): a specific time period within which an attachment between infant and carer must form.

The fact that goslings imprinted onto humans exhibit sexual advances to humans when adult birds shows the importance of the behaviour upon future relationships, something that Bowlby incorporated into his continuity hypothesis (see page 138).

There are extrapolation issues with animal studies; the attachment behaviour of geese is not necessarily that of humans.

ON THE WEB

The idea of imprinting fascinated cartoonists and there are many examples of the phenomenon being animated. A really good example is the 1955 *Tom & Jerry* episode 'That's my mommy'. Watch on YouTube by searching for 'Tom and Jerry – That's My Mommy 1955 (Episode 97)'.

INCREASE YOUR KNOWLEDGE

In1938, Lorenz joined the Nazi party and stated 'my whole scientific work is devoted to the idea of the national socialists (Nazis)'. He worked as a military psychologist in the Second World War, deciding which 'half-breeds' would be sent to concentration camps, which led to the criticism that his involvement in Nazi eugenic policies (controlling breeding to increase desirable genetic characteristics) contaminated his work with researcher bias. However, it is widely believed that his research did retain scientific objectivity and he subsequently apologised for his involvement with the Nazis, going on to help form the Austrian Green Party in his later years.

PSYCHOLOGY IN THE REAL WORLD

Figure 3.6 Whooping cranes and their imprinted micro-light aircraft parents

In the 1996 film *Fly Away Home*, 13-year-old Amy imprints some baby goslings onto herself. These birds are migratory with the parent birds normally teaching their young traditional migratory paths. As these birds have been orphaned, Amy and her father disguise two micro-light aircraft as huge geese and teach the birds to follow them in flight, taking them on a long migratory flight to an area of endangered wetland in the USA.

The following spring the young birds make their way back unassisted to Amy's home in Canada.

What many people might not realise is that the technique of imprinting migratory birds onto micro-light aircraft and teaching them migratory paths is one that is actually successfully used to reintroduce birds to areas where they have become extinct. Whooping cranes were reduced to just one flock of fifteen birds in eastern North America and they were declared an endangered species. However, using the micro-light migration technique their numbers are now in the hundreds and increasing.

Another practical application of imprinting is that used by sheep farmers. A newborn lamb whose mother has died will not normally be accepted by another ewe that has lost her own lamb, even though she is producing milk. However, if the dead lamb belonging to the ewe is skinned and its pelt tied to the orphaned lamb, there is a good chance that an attachment will occur. The imprinting here is olfactory (through smell).

ON THE WEB

Rare footage of Lorenz and his geese can be seen on YouTube by searching for 'Konrad Lorenz – Imprinting'.

There's also a half-hour interview with him, filmed in 1975, after he won his Nobel Prize in 1973. You can watch this on YouTube by searching for 'Konrad Lorenz – Ethology and Imprinting (1975)'.

CLASSIC RESEARCH

Even baby monkeys need comfort more than food – Harry Harlow (1959)

Figure 3.7 Harry Harlow and his surrogate mothers

Harlow used rhesus monkeys to see if attachments are primarily formed through food as explained by learning theory (see page 115). Newborn monkeys were separated from their mothers and raised in isolation in cages. In each cage was a 'baby blanket' and the infant monkeys became distressed whenever the blanket was removed, a similar reaction to when baby monkeys are separated from their mothers. This suggested that attachment was not based on association with food.

Aim

To test learning theory by comparing attachment behaviour in baby monkeys given a wire surrogate mother producing milk with those given a soft towelling mother producing no milk.

Procedure

1 Two types of surrogate mother were constructed – a harsh 'wire mother' and a soft 'towelling mother'. Sixteen baby monkeys were used, four in each of four conditions:
   - a cage containing a wire mother producing milk and a towelling mother producing no milk
   - a cage containing a wire mother producing no milk and a towelling mother producing milk
   - a cage containing a wire mother producing milk
   - a cage containing a towelling mother producing milk

2 The amount of time spent with each mother, as well as feeding time, was recorded.

3 The monkeys were frightened with a loud noise to test for mother preference during stress.

4 A larger cage was also used to test the monkeys' degree of exploration.

Findings

1 Monkeys preferred contact with the towelling mother when given a choice of surrogate mothers, regardless of whether she produced milk; they even stretched across to the wire mother to feed while still clinging to the towelling mother.
2 Monkeys with only a wire surrogate had diarrhoea, a sign of stress.
3 When frightened by a loud noise, monkeys clung to the towelling mother in conditions where she was available.
4 In the larger cage conditions, monkeys with towelling mothers explored more and visited their surrogate mother more often.

Conclusions

Rhesus monkeys have an innate, unlearned need for contact comfort, suggesting that attachment concerns emotional security more than food.

Contact comfort is associated with lower levels of stress and a willingness to explore, indicating emotional security.

Evaluation

This study involved animals and therefore we cannot necessarily extrapolate (generalise) the results to humans.

There are ethical issues involving the separation of baby monkeys and the stress caused to them.

Interestingly, over time, Harlow publicly distanced himself from the work of Bowlby and Ainsworth, as well as Lorenz's views on imprinting. He especially did not believe that his work supported Bowlby's belief of a child's innate need for mother love.

ON THE WEB

Two good videos about Harlow, containing original footage of the study, can be found on YouTube by searching for 'Harlow's Studies on Dependency in Monkeys' and 'Harlow's Monkeys'.

There you will find links to other relevant videos.

There's also a BBC programme about Harlow's experiments from the series *Mind Changers* at:

www.bbc.co.uk/programmes/b00ly7lp

Other research

KEY TERMS

Critical period – a time period in which imprinting must form, after which time it will not be possible for such attachments to form

Sensitive period – a best time period within which attachments can form, though they still can form with more difficulty outside this period

Sluckin (1966) questioned whether there actually was a **critical period**, a set time period in which imprinting must occur or it never would do so. Performing a replication of Lorenz's famous study, but using ducklings instead of goslings, he successfully imprinted them onto himself, but kept one duckling in isolation well beyond (up to five days) Lorenz's reported critical period. He found it was still possible to imprint this youngster and concluded that the critical period was actually a **sensitive period**, a time period best for imprinting to perform, but one beyond which attachments could still be formed.

Harlow *et al.* (1965) raised newborn monkeys in total isolation from other living beings for 3, 6, 12 or 24 months. These monkeys displayed signs of psychological disturbance, hugging their own bodies and rocking repetitively. When eventually placed with other monkeys they were fearful of them and had no social interactions, other than to attack them. They also harmed themselves, biting their arms and legs and pulling out their hair. The degree of damage correlated positively with the amount of total isolation a monkey had endured. These monkeys, when adult, seemed to have no ability to engage in sexual courtship. Harlow, keen to see how they would cope as parents, devised an apparatus he called a 'rape rack' to which female monkeys raised in isolation would be tied and forcibly mated. As parents they were awful, abusing and neglecting their babies; one mother chewed off her own baby's feet and fingers, while another crushed her baby's head to a pulp. The findings suggest that social interactions are essential for normal social and emotional development to occur. Harlow & Suomi (1972) raised four

newborn male monkeys in total isolation for six months and then placed each one with a normally raised three-month-old female 'therapist' monkey for two hours three times a week, gradually increasing the amount of contact time. After twelve months their behaviour was almost normal and by three years of age they had totally recovered and were able to live among normally raised monkeys. This suggests that the effects of total isolation are reversible.

RESEARCH IN FOCUS

1 Why might it be difficult to generalise the findings of animal studies to humans? Refer to specific aspects of Lorenz's and/or Harlow's studies in your answer.
2 The ethics of experimenting on animals are also controversial. What aspects of Lorenz's and Harlow's studies could be considered unethical?
3 What is a cost–benefit analysis and could it be used to justify both Lorenz's and Harlow's studies?

For information on research methods, see Chapter 7.

Evaluation

- Harlow's isolation studies influenced Bowlby in devising his maternal deprivation hypothesis, where he saw any disruption of the attachment bond as having serious, irreversible effects.

  Sackett (2002), a student of Harlow's, believes that Harlow's research was so unjustifiably unethical that the American animal liberation movement was born out of it.

INCREASE YOUR KNOWLEDGE

Harlow's research raises serious ethical concerns as to the degree of harm it caused to monkeys, many of whom died. Harlow's wife died in 1971 from cancer, plummeting him into severe depression (treated with electroconvulsive therapy (ECT)), after which he developed a morbid interest in the origins of mental illness, which may explain his isolation studies and his inability to see the degree of harm they were causing. He fell into alcoholism, became estranged from his children, contracted Parkinson's disease and died from a brain tumour in 1981.

STRENGTHEN YOUR LEARNING

1 What is meant by imprinting?
2 Outline the procedure and findings of Lorenz's study into attachment.
3 What conclusions can be drawn from Lorenz's findings?
4 Explain one practical application of Lorenz's research into imprinting.
5 Why might Lorenz's research have been affected by researcher bias?
6 What does Harlow's surrogate mother study tell us about the learning theory explanation of attachments?
7 Give one strength and one weakness of using monkeys to study attachments.
8 Do findings from animal studies support the idea of a critical period? Explain your answer.
9 Is Harlow's total isolation study unethical? Give the case for and against.

ASSESSMENT CHECK

1 Select from the letters A, B, C, D and E to place the correct stage of attachment next to the descriptions in the table below. One letter will be left over. **[4 marks]**

A Discriminate attachment phase

B Pre-attachment stage

C Post-attachment phase

D Multiple attachments stage

E Indiscriminate attachment phase

Stage of attachment development	Descriptive features
	From six weeks of age, infants become attracted to other humans
	Infants smile more at known people, though they will still allow strangers to handle and look after them
	Infants avoid unfamiliar people and protest if strangers try to handle them
	Infants form emotional ties with other caregivers

2 A gust of wind blew a goose egg out of its nest and it came to rest against Breacan, an English Pointer dozing in the sunshine nearby; a few moments later the egg hatched. When Breacan got up and walked about, the baby gosling followed him wherever he went. As the day got hotter the dog went for a swim, followed closely by the gosling, who completely ignored its mother swimming nearby with her other newly hatched chicks.

Refer to the passage above to explain the gosling's behaviour in terms of imprinting. **[4 marks]**

3 Outline what psychologists have discovered about the role of the father in attachment behaviour. **[6 marks]**

4 Discuss caregiver–infant interactions in humans. **[16 marks]**

5 Outline and evaluate animal studies of attachment. **[12 marks]**

6 Outline what is meant by interactional synchrony. **[3 marks]**

7 Explain why Harlow's studies with monkeys could be considered unethical. **[4 marks]**

3.3 Explanations of attachment

'You don't have to be an at-home parent to be an attachment parent.'
Mayim Bialik (2012)

'Always be nice to your children because they are the ones who will choose your rest home.'
Phyllis Diller (2009)

We have already looked at how attachments develop, but now we turn our attention to the reasons why attachments form. Two explanations will be looked at here: **learning theory** and Bowlby's monotropic theory.

Learning theory

Learning theory (also known as the behaviourist explanation – though learning theory also includes social learning theory) sees all behaviour as acquired through experience via the process of association. Attachments are seen as developing through an infant learning to associate a caregiver with feeding. Two types of learning theory apply to the development of attachments: **classical conditioning** and **operant conditioning**.

As caregivers meet babies' physiological needs, learning theory is also known as a **cupboard love theory** (as the cupboard contains food).

Classical conditioning

Classical conditioning occurs when a response produced naturally by a certain stimulus becomes associated with another stimulus that is not normally associated with that particular response.

Therefore attachments are learned by the stimulus of food (an unconditional stimulus), which produces a natural response of pleasure (an unconditioned response), being paired with a caregiver (a conditioned stimulus). After several paired presentations of caregiver and food, the infant learns to associate pleasure solely with the caregiver without any need for food.

Table 3.2 How attachments form due to classical conditioning

Before learning	Food (UCS) → Pleasure (UCR)
During learning	Food (UCS) + Caregiver (CS) → Pleasure (UCR)
After learning	Caregiver (CS) → Pleasure (CR)

Operant conditioning

Operant conditioning is based on Thorndike's 'Law of Effect', where any action that has a pleasurable outcome will be repeated again in similar circumstances. Pleasurable outcomes are known as reinforcements (as they strengthen the behaviour, making it more likely to occur again). Positive reinforcements involve receiving something pleasurable for performing a certain behaviour (such as receiving pocket money for doing chores), while negative reinforcements involve not receiving something non-pleasurable for performing a certain behaviour (such as not being grounded for tidying your room).

KEY TERMS

Learning theory – the belief that attachments develop through conditioning processes

Classical conditioning – the development of an attachment bond due to a caregiver becoming associated with the pleasure that feeding naturally brings

Operant conditioning – the development of an attachment bond to a caregiver through the provision of food becoming associated with the removal of the unpleasant sensation of hunger

Cupboard love theory – the belief that attachments are formed with people who feed infants

Figure 3.8 Learning theory sees attachments as forming due to an association being developed between mother and feeding

Therefore attachments occur through caregivers becoming associated with reducing the unpleasant feeling of hunger (a negative reinforcement) so that the caregiver becomes a source of reinforcement (reward) themself.

Research

Dollard & Miller (1950) argued that in their first year, babies are fed 2,000 times, generally by their main carer, which creates ample opportunity for the carer to become associated with the removal of the unpleasant feeling of hunger, a form of negative reinforcement. This gives support to the idea that attachments are learned through operant conditioning.

Schaffer & Emerson (1964) (see Classic research, page 105) found that in 39 per cent of cases, the mother (usually the main carer) was not the baby's main attachment figure, suggesting that feeding is not the primary explanation of attachment. This goes against learning theory.

Fox (1977) studied attachment bonds between mothers, babies and metapelets on Israeli kibbutzim (communal farms). Metapelets are specially trained, full-time carers of newborn children, allowing mothers to work (though some time is spent with parents). Generally children were more attached to their mothers than metapelets. As the metapelets did the majority of the feeding, this suggests learning theory is invalid.

Evaluation

- Conditioning best explains the learning of simple behaviours, but attachments are more complex behaviours with an intense emotional component. This, coupled with the fact that attachments develop with people who do not feed babies, casts doubt on the learning theory.
- Schaffer (1971) commented that 'cupboard love' theories put things the wrong way round. Babies do not 'live to eat', but 'eat to live'; thus they actively seek stimulation, not passively receive nutrition.
- Bowlby (1973) argued that babies only need food occasionally, but constantly require the emotional security that closeness to an attachment figure provides. This suggests that food, and thus the learning theory, is not the main reason for formation of attachments. Conditioning and reinforcement through feeding probably do play a part in helping form attachments, but as Bowlby says, they're not the main reason.
- Behaviourist explanations are reductionist, as they explain complex behaviours in the simplest way possible. When explaining attachments as simply down to feeding, behaviourism does not consider internal cognitive (mental) processes or the emotional nature of attachments.

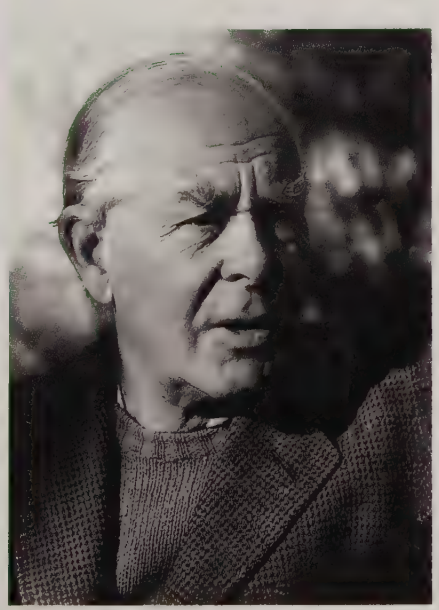


Figure 3.9 John Bowlby was a pioneer of research into children's attachments. He is buried in a quiet location on the Isle of Skye

Bowlby's monotropic theory (1951, 1969, 1973)

John Bowlby (1907–90) had a lifetime interest in children's development, stemming from his early work with delinquent children and the growth of his own four children. In 1949 the World Health Organization commissioned him to write a report entitled Maternal Care and Mental Health, concerning the mental health of homeless children (of which there were a lot after the Second World War). This led to his evolutionary

explanation of attachment, the **monotropic theory**, which was formed and adapted over a number of years, and also his maternal deprivation hypothesis (see page 129), concerning the disruption of attachment bonds.

Bowlby was heavily influenced by animal studies, including Harlow's research with monkeys (see Classic research, page 111) and Lorenz's study of imprinting in goslings (see page 110), which led him to reject learning theory.

Bowlby applied the findings of these animal studies to humans to suggest that emotional bonds had evolutionary functions. He saw attachment bonds as developing during the Pleistocene (stone-age) era. Here humans faced the constant danger of predators and so attachments evolved via the process of natural selection to ensure that offspring stayed close to caregivers. Thus, through evolution infants became genetically programmed to behave towards their mothers in ways that increased their survival chances. These innate species-specific attachment behaviours are known as **social releasers** and include:

- **crying** – to attract parents' attention
- **looking, smiling and vocalising** – to maintain parental attention and interest
- **following and clinging** – to gain and maintain proximity (physical closeness) to parents.

Infants display these attachment behaviours from a very early stage. They occur in an automatic, stereotyped way to begin with and are triggered at first by many people. However, during the first year, these behaviours become focused on a few individuals and thus become organised into more flexible and sophisticated behaviour systems. Attachments, however, only form if carers respond to infant attachment behaviours in a meaningful way. Bowlby believed that the evolution of attachment behaviours involved a complementary system between infants and their carers, whereby carers would respond to infants' signals in a meaningful way. Although Bowlby saw this as generally occurring between infants and their biological mothers, he admitted this could, occasionally, occur with their fathers or even a non-biological figure (which explains how close attachments to adopted parents could occur).

Overall Bowlby saw attachment functioning as a control system to maintain proximity to the mother. When this state occurs, attachment behaviour is 'quiet' – infants have no need to cry or cling and so they can get on with playing and exploring (which aids mental and social development). When the state is threatened, such as when the mother disappears from view or a stranger approaches, attachment behaviours are activated to restore it. Generally, attachment behaviours are seen when children are upset, ill, scared or in strange surroundings; which particular responses are produced change as children grow and become more competent, cognitively and behaviourally.

Critical period

Bowlby believed that there is a **critical period** for the formation of attachments, whereby attachment behaviours between infant and carer must occur within a certain time period if children are to form attachments. He saw attachment behaviours as useless for most children if delayed until after twelve months and useless for all children if delayed until after two-and-a-half to three years.

KEY TERMS

Monotropic theory – the idea that infants have an inbuilt tendency to make an initial attachment with one attachment figure, usually the mother

Social releasers – innate, infant social behaviours that stimulate adult interaction and caregiving

Critical period – a specific time period within which an attachment must form, after which time it will not be possible for such bonding to occur

KEY TERMS

Internal working model – a cognitive framework used to understand the world, self and others, that acts as a template for future relationships based on an infant's primary attachment

Monotropy – an innate tendency to become attached to one particular adult

Internal working model

Bowlby sees attachments as monotropic, whereby infants have an innate tendency to become attached to the one particular adult who interacts with them the most sensitively, usually the biological mother. This attachment is unique: it is the first to develop and the strongest of all, forming a model for relationships, which the infant will expect from others. This is known as the **internal working model**, a template for future relationships based upon the infant's primary attachment, which creates a consistency between early emotional experiences and later relationships. For Bowlby, 'Mother love in infancy is as important for mental health as vitamins and proteins for physical health.' Although Bowlby acknowledged that infants could form attachments to other specific people, he saw these as secondary attachments. For Bowlby, attachment was a hierarchy with the prime attachment at the top and secondary attachments of minor importance below.

Research

Lorenz (1935) (see Classic research, page 110) found that certain animals have an innate tendency to respond immediately and consistently to specific forms of stimuli, like visual markings or sounds, usually displayed by a parent. They are attracted to these stimuli and will follow anyone displaying such stimuli and seem content when near them and distressed when not. This suggests that such innate 'pre-programming' provides an evolutionary advantage, as by staying close to such individuals, newborn animals are safer from predators and environmental danger. This therefore supports Bowlby's evolutionary theory.

Schaffer & Emerson (1964) (see Classic research, page 105) found that multiple attachments are the norm, which goes against Bowlby's idea of **monotropy**, as does the fact that 39 per cent of children had their main attachment to someone other than the main carer.

Rutter (1981) found that mothers are not special in the way Bowlby believed. Infants display a range of attachment behaviours towards attachment figures other than their mothers and there is no particular attachment behaviour used specifically and exclusively towards mothers, which lessens support for Bowlby's theory.

Lamb *et al.* (1982) studied the attachments infants had with people like fathers, grandparents and siblings and found that infants had different attachments for different purposes rather than attachments being a hierarchy. For example, infants go to fathers for play, but mothers for comfort, going against Bowlby's idea of monotropy.

INCREASE YOUR LEARNING

Kagan (1984) founded the temperament hypothesis, by finding that infants have an innate personality, such as being easy going or difficult, which influences the quality of their attachments with caregivers and later relationships with adults. This suggests that attachments form as a result of temperament not an innate gene for attachment, which goes against Bowlby's theory. Belsky & Rovine (1987) supported this by finding that infants in their first few days of life display characteristics that match their later attachment types; for example, calmer and less anxious infants went on to form secure attachments.

Evaluation

- Research evidence supports the continuity hypothesis (see page 138), that there is a consistency between early attachment types and later relationships in line with Bowlby's theory.
- Although Schaffer & Emerson (1964) found that children tended to have multiple attachments, they also tended to have one primary attachment figure, supporting Bowlby's idea of monotropy.
- Bowlby's theory has been used by right-wing political figures as scientific proof that women should be at home mothering children and not at work. For example, during the Second World War, in Britain, when men were deployed as soldiers and women were working, the phrase 'latch-key children' was used to describe children coming home to an empty house. Such children were seen to often perform poorly at school, as they were not being encouraged at home to engage in stimulating activities.
- Imprinting applies mainly to precocial animals (those mobile soon after birth). As humans are an altricial species (born at a relatively early stage of development), imprinting may not relate to humans.
- Bowlby's idea of attachment being a form of human imprinting suggests that mere exposure to another individual is sufficient for an attachment to develop. However, Schaffer & Emerson (1964) found that attachments occurred mainly with individuals displaying sensitive responsiveness, which goes against this idea.
- Bowlby sees fathers as minor attachment figures, but research (see The role of the father, page 107) suggests that fathers can be attachment figures in their own right.

STRENGTHEN YOUR LEARNING

1. How can the following explain the formation of attachments?
   (i) Classical conditioning
   (ii) Operant conditioning
2. Give a brief evaluation of learning theory, giving points for and against.
3. Why is the learning theory explanation of attachment known as 'cupboard love theory'?
4. Explain why Bowlby's monotropy theory is an evolutionary explanation.
5. Explain what is meant by social releasers. Give some examples.
6. Explain how Kagan's temperament hypothesis opposes Bowlby's theory of monotropy.

3.4 Ainsworth's 'Strange Situation'

'Simply having children does not make mothers.'
John A. Shedd (1928)

American Mary Ainsworth (1913–99) worked with John Bowlby in the 1950s and then studied mother–child relationships in the Ganda tribe of Uganda. Over nine months she observed 26 mothers, with infants ranging

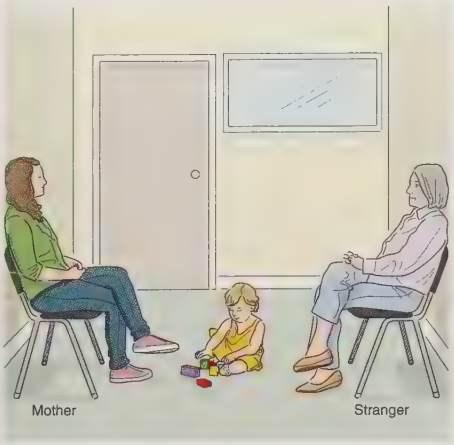


Figure 3.10 The Strange Situation is a procedure for measuring the strength and type of infants' attachments to their mothers

in age from 15 weeks to 2 years, for hours at a time. In addition to her observations, Ainsworth carried out interviews with the mothers. From these data she identified three **types of attachments** (see Table 3.3).

Table 3.3 Ainsworth's attachment types

Type of attachment	Description
Type A: Insecure-avoidant	Infants are willing to explore, have low stranger anxiety, are unconcerned by separation and avoid contact at the return of their caregiver. Caregivers are indifferent to infants' needs.
Type B: Securely attached	Infants are keen to explore, have high stranger anxiety, are distressed by separation, are easy to calm and are enthusiastic at the return of their carer. Caregivers are sensitive to infants' needs.
Type C: Insecure-resistant	Infants are unwilling to explore, have high stranger anxiety, are upset by separation and seek and reject contact at the return of their caregiver. Caregivers are ambivalent to infants' needs, demonstrating simultaneous opposite feelings and behaviours.

KEY TERMS

Types of attachment – the different forms of attachment patterns that can form as a result of caregiver–infant interactions

The Strange Situation – the accepted observational testing method for measuring attachment types

Separation anxiety – the degree of distress shown by infants when parted from attachment figures

In 1978 Ainsworth performed a similar study in Baltimore, USA, visiting 26 mother–child pairs every three to four weeks for the babies' first year of life. Each visit lasted three to four hours. Interviews and naturalistic observations were used, with the latter playing a greater role.

Ainsworth identified two important features of attachment, both with an adaptive survival value. Firstly, infants seek proximity to their mothers, especially when feeling threatened. Secondly, secure attachments allow infants to explore (behaviour that aids cognitive and social development), using their attached figure as a safe base to explore from and return to.

CLASSIC RESEARCH

The Strange Situation – Mary Ainsworth *et al.* (1978)

The Strange Situation testing procedure was created to make sense of the data Ainsworth had collected and to create a valid method of measuring attachments.

Aims

- To assess how infants between 9 and 18 months of age behave under conditions of mild stress and novelty, in order to test stranger anxiety, **separation anxiety** and the secure base concept.
- To assess individual differences between mother–infant pairs in terms of the quality of their attachments.

Procedure

1 The Strange Situation comprised eight episodes. Each of these lasted for about 3 minutes, except episode one which lasted for 30 seconds.

2 Every aspect of participants' behaviour was observed and videotaped, with most attention given to reunion behaviours, the infants' responses to their mothers' return. Data were combined from several studies. In total 106 infants were observed.

3 The testing room was an unfamiliar environment (hence the name 'Strange Situation') comprising an 81 square foot (approx 7.5 square metres) area divided into 16 squares to help record movements.

4 Five categories were recorded:
   (i) proximity- and contact-seeking behaviours
   (ii) contact-maintaining behaviours
   (iii) proximity- and interaction-avoiding behaviours
   (iv) contact- and interaction-resisting behaviours
   (v) search behaviours.

5 Every 15 seconds, the category of behaviour displayed was recorded and scored on an intensity scale of 1 to 7.

Episode	Persons present	Brief description
1	Mother, infant, observer	Observer introduces mother and infant to experimental room, then leaves.
2	Mother, infant	Mother is passive while the infant explores.
3	Stranger, mother, infant	Stranger enters. First minute: stranger silent. Second minute: stranger converses with mother. Third minute: stranger approaches infant. After three minutes, mother quietly leaves.
4	Stranger, infant	First separation episode. Stranger's behaviour is geared towards that of the infant.
5	Mother, infant	First reunion episode. Stranger leaves. Mother greets and/or comforts infant, then tries to engage infant again in play. Mother then leaves, saying 'bye-bye'.
6	Infant	Second separation episode. Infant is alone.
7	Stranger, infant	Continuation of second separation. Stranger enters and gears her behaviour to that of the infant.
8	Mother, infant	Second reunion episode. Mother enters, greets and then picks up infant. Meanwhile, stranger quietly leaves.

Table 3.4 The eight episodes of the Strange Situation

Findings

1 Generally infants explored the playroom and toys more enthusiastically when just the mother was present than either a) after the stranger entered or b) when the mother was absent.

2 Reunion behaviours reflected three types of attachment:

Type A: Insecure-avoidant – 15 per cent of infants ignored their mother and were indifferent to her presence. Level of play wasn't affected whether by the mother's presence or absence. Infants displayed little stress when she left and ignored or avoided her when she returned. Infants reacted to the mother and stranger in similar ways, showing most distress when left on their own.

Type B: Securely attached – 70 per cent of infants played contentedly when their mother was present, whether or not a stranger was present, but were distressed when she left. On her return they sought comfort from her, calmed down and re-started to play. Mother and stranger were treated very differently

Type C: Insecure-resistant – 15 per cent of infants were fussy and wary, even with their mother present. They were distressed by her leaving and sought contact with her on her return, but simultaneously showed anger and resisted contact (for example, putting out their arms to be picked up, then fighting to get away once they had been picked up).

Conclusions

Sensitive responsiveness is the major factor determining the quality of attachments, as sensitive mothers correctly interpret infants' signals and respond appropriately to their needs. Sensitive mothers tend to have securely-attached babies, whereas insensitive mothers tend to have insecurely-attached babies.

Evaluation

The identification by Ainsworth of the importance of parental sensitivity in creating secure attachments is backed up by similar findings from studies using larger samples.

The Strange Situation testing procedure has become a paradigm, the accepted method of assessing attachments.

The Strange Situation assumes that attachment types are fixed characteristics of children, but classification can change if family circumstances, like mothers' stress levels, alter. Therefore attachment type is not a permanent characteristic.

The Strange Situation is an artificial way of assessing attachment, as it is laboratory based with mother and stranger acting to a 'script'. This is far removed from everyday situations and thus lacks ecological validity. Brofenbrenner (1979) found that infants' attachment behaviour is much stronger in a laboratory than when at home (because of the strangeness of the environment).

The Strange Situation focuses too much upon the behaviour of infants, and not enough on that of mothers, which could distort results.

The Strange Situation may be unethical, as it deliberately stresses infants to see their reactions. However, it can be seen as justifiable, as the stress caused is no greater than that of everyday experiences like being left with an unfamiliar babysitter or childminder.

The Strange Situation might not be a valid measure of attachment type. Main & Weston (1981) found that children acted differently in the Strange Situation depending on which parent they were with. Children might be insecurely attached to their mothers, but securely attached to their fathers, illustrating that attachment types are linked to individual relationships with carers and are not set characteristics of children.

The Strange Situation is reliable though, as children tested at different times generally have identical attachment types. Main *et al.* (1985) found all infants identified before 18 months of age, were still securely attached at 6 years of age and 75 per cent identified as insecure-avoidant still were.

Main & Solomon (1986) found an additional attachment type, **insecure-disorganised** (Type D), displayed by a small number of children, whose behaviour was a confusing mixture of approach and avoidance behaviours. Ainsworth (who had worked with Main) agreed with this extra type.

The Strange Situation may not be suitable for use in all cultures, as it contains elements unfamiliar to some cultures, like being left with strangers (see Cultural variations in attachment, page 123).

KEY TERMS

Insecure-avoidant attachment – type of attachment characterised by infants being independent of a caregiver physically and emotionally, with the caregiver not seeking to give comfort during times of distress

Secure attachment – type of attachment characterised by infants being confident that a caregiver is available to meet their needs and will act as a safe base and a source of comfort in times of distress

Insecure-resistant attachment – attachment type characterised by infants being clingy and dependent, while simultaneously rejecting interactions with a caregiver, with such caregivers being inconsistent in meeting an infant's needs and providing support during times of distress

Insecure-disorganised attachment – attachment type characterised by infants displaying a mixture of insecure-avoidant and insecure-resistant behaviours

ON THE WEB

A reflection on the work of Ainsworth from the BBC series *Mind Changers*, focusing on her work in Africa and the Strange Situation can be found at:

www.bbc.co.uk/programmes/p00f8n6q

There's also a three-part programme about Ainsworth's life history and work on YouTube. Search for 'Ainsworth and Attachment Part 1', 'Ainsworth and Attachment Part 2' and 'Ainsworth and Attachment Part 3'.

INCREASE YOUR KNOWLEDGE

Figure 3.11 Just like her co-worker John Bowlby, Mary Ainsworth had a poor relationship with her mother. Did this motivate their mutual interest in attachment theory?

John Bowlby and Mary Ainsworth are major figures in attachment theory, but their early life histories cast a fascinating light onto the origins of their interest in child psychology. Ainsworth had a close relationship with her father who performed, unusually for the time, many childcaring duties; she fondly recalled him reading to her and putting her to bed. However, he was away from home a lot as he worked as a travelling salesman. She did not have a close relationship with her mother, a woman who apparently showed little affection. Ainsworth married in 1950, but divorced ten years later, resulting in depression and long-term psychoanalytic therapy. She longed for children, but never had any. Bowlby was raised in an upper-middle-class family, who believed that too much parental affection and attention would spoil a child. As with Ainsworth he did not have a close relationship with his mother; he saw her for one hour each day at tea time. He was raised by a nanny, but he described her leaving when he was 4 years old as 'the tragic loss of my mother'. At age 7 he was sent to boarding school, which he recalled as a 'traumatic experience'. He did, however, enjoy a long and happy marriage that produced four children of whom he was immensely fond.

Perhaps Bowlby and Ainsworth's early experiences motivated them to try and find the path to true childhood happiness.

Cultural variations in attachment

If Bowlby's belief that attachments evolved and have a survival value is true then patterns of attachment types should be similar across different cultures, regardless of child-rearing styles used within those cultures. Secure attachments should dominate in all cultures, with equal amounts of insecure-avoidant and insecure-resistant types.

Belsky (1999) even proposes an evolutionary reason for the existence of similar attachment types in different cultures; he argues that insecure attachment types are associated with weak adult relationships and early sexual activity, which could be useful in certain situations, like after a famine or plague when many people have died, as people would need to reproduce by being sexually active at a young age and not getting too emotionally involved with people who may die young.

However, if different patterns of attachment types are found cross-culturally, it would mean that infants' attachment types are not biological, but learned through exposure to different cross-cultural child-rearing styles.

Child-rearing styles do vary across different cultures; in some cultures one person does most caregiving, while in others many carers are involved. There are also cross-cultural differences as to how different attachment types are regarded. For example, Reebye *et al.* (2014) found that in Britain we tend to view insecure-avoidant attachment negatively, as it is associated with weak attachments to people, but in Germany it tends to be valued as it is associated with being independent from others, which is viewed positively in German culture. Not surprisingly, in Germany many more infants are classed as being insecure-avoidant.

KEY TERM

Cultural variations in attachment – differences in child-rearing practices and attachment types between different cultural groupings

CLASSIC RESEARCH

Cross-cultural patterns of attachment: meta-analysis of the Strange Situation – Marinus van IJzendoorn & Pieter Kroonenberg (1988)

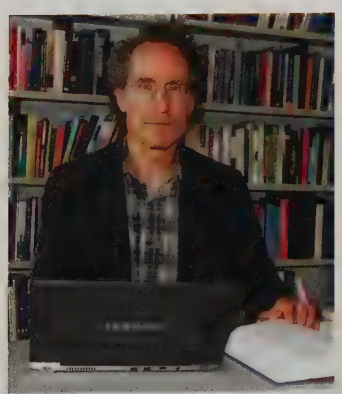


Figure 3.12a and b Marinus van IJzendoorn & Pieter Kroonenberg

Several studies had used the Strange Situation procedure to assess similarities and differences in patterns of attachment types between cultures. However, these studies had comprised small sample sizes and hadn't considered intra-cultural against inter-cultural differences (whether differences between cultures are greater than those within cultures). The researchers' solution was to perform a meta-analysis of Strange Situation studies in different cultures.

Aims

- To assess whether within separate samples there was a pattern in the distribution of different attachment types.
- To assess the extent of inter- (between) and intra- (within) cultural differences in attachment types in separate samples.
- To assess similarities and differences in the amount of Type A, B and C attachment types in separate samples.

Procedure

A meta-analysis of 32 studies from 8 countries that used the Strange Situation procedure to assess mother–child attachments (and not father–child attachments, etc.) and which classified attachments as either Type A, B or C. 1,990 separate Strange Situation classifications were used. All studies comprised at least 35 mother–infant pairs with infants below 2 years of age.

Findings

Country	Number of studies	Number of mother–infant pairs	Percentage of Type A attachment type (insecure-avoidant)	Percentage of Type B attachment type (secure attachment)	Percentage of Type C attachment type (insecure-resistant)
Britain	1	72	22	75	3
China	1	25	25	50	25
Germany	3	136	35	57	8
Holland	4	251	26	67	6
Israel	2	118	7	64	29
Japan	2	96	5	68	27
Sweden	1	51	22	75	4
USA	18	1230	21	65	14

Table 3.5 Meta-analysis of 32 Strange Situation studies comprising 1,990 mother–child pairs

1 Overall attachment (drawn from all mother–infant pairs) was Type A = 21 per cent, Type B = 67 per cent, Type C = 12 per cent.
2 In samples from all cultures (except one sample from Germany) the modal attachment type was Type B (secure attachment).
3 The highest proportion of Type A attachment (insecure-avoidant) was found in German samples.
4 Intra-cultural differences (differences in attachment types between samples from one country) were often greater than inter-cultural differences (differences in attachment types between different countries). For example, in one USA sample there was 94 per cent Type A attachments, while in another USA sample there was only 47 per cent Type A attachments.
5 Type A attachment type was found more in Western cultures, while Type C attachment type was found more in Israel, China and Japan.

Conclusions

The data suggests there is a difference in the pattern of cross-cultural attachment types across cultures.

Intra-cultural differences in attachment types are often greater than inter-cultural ones.

Overall patterns of attachment types were similar to what Ainsworth found.

An important cross-cultural similarity is the predominance of Type B attachment in all cultures.

Evaluation

As intra-cultural differences were often found in different samples from the same researcher(s), it suggests such differences were not due to methodological differences.

Data drawn from cultures not represented in the meta-analysis, for example, African, South American samples, etc., would be required before universal conclusions could be drawn.

Some intra-cultural differences may be due to socio-economic differences; for instance some USA samples were of middle-class pairings, while other USA samples used pairings from poorer socio-economic backgrounds.

Cross-cultural studies like these can suffer from an **imposed etic**, where researchers analyse findings in a biased manner in terms of their own cultural beliefs, wrongly imposing cultural-specific beliefs onto other cultures. For instance, Ainsworth, an American, assumed that separation anxiety was an indication of secure attachment, but it may represent something else in other countries.

KEY TERMS

Cross-cultural studies – comparison of findings from people of different cultures

Imposed etic – using techniques that are only relevant to one culture to study and/or draw conclusions about another

YOU ARE THE RESEARCHER

Watch a video clip of the Strange Situation, such as the one you can find on YouTube by searching for 'Ainsworth Strange Situation'.

Watch it with the sound off and see if you can identify the type of attachment. You will need to create some behavioural categories first. Establishing inter-observer reliability would be important here; what is this and how would you establish it?

For information on research methods, see Chapter 7.

CONTEMPORARY RESEARCH

Infant–mother attachment among the Dogon people of Mali – Mary McMahon-True, Lelia Pisani, Fadimata Oumar (2001)

Figure 3.13 A Dogon mother with her child

Constantly keeping infants physically close, breastfeeding on demand and responding immediately to distress are common practices within Dogon culture, but very different from our own culture. Therefore this study gives a valuable insight into a culture where infants are raised by natural parenting practices and provides a contrast to the more usual studies performed on Western cultural samples.

Aims

- To assess whether infant attachment types are different in a culture that raises infants using natural parenting methods.
- To assess whether attachment security was related to the quality of mother–infant communications.
- To assess whether mothers of secure infants respond more sensitively to their infants than mothers of insecure infants.

Procedure

42 mother and infant pairs from rural Dogon villages were used as participants, with infants ranging in age from 10 months to 12.5 months at first assessment. The Strange Situation testing method was used to assess attachment styles. The results were compared to those from four North American samples, with a total of 306 mother–infant pairs tested.

Findings

Type of culture	Percentage of avoidant attachments (Type A)	Percentage of secure attachments (Type B)	Percentage of resistant attachments (Type C)	Percentage of disorganised attachments (Type D)
Dogon	0	67	8	25
North American	23	55	8	15

Table 3.6 Comparison of attachment styles in Dogon and North American cultural samples

1 Many Dogon children had their grandmother as principal carer during the day, but attachment classifications were unaffected by the type of primary caregiver, because mothers remained closely involved with children through regular breastfeeding and co-sleeping during the night.

2 Positive correlations were found between maternal sensitivity and infant security ratings and the quality of mother–infant communications and infant security ratings.

Conclusions

Children raised by natural child-rearing practices have higher levels of secure attachment and no insecure-avoidant attachments. This is explained by the incompatibility of Dogon child-rearing practices with Western cultural child-rearing practices associated with insecure-avoidant styles. In Dogon culture there is no maternal rejection of attachment bids, intrusion or lack of physical contact.

Naturally parented children have greater attachment security and an absence of insecure-avoidant attachment, when compared to children of Western cultures.

Evaluation

The high proportion of secure attachments and no avoidant attachments found among the Dogon people is remarkable considering the mortality rate of around 45 per cent of infants before the age of 5 and the high rates of social and economic stressors, for example the high proportion of mothers with HIV and the high levels of poverty.

The findings are backed up by two similar studies. Tomlinson *et al.* (2005), using a South African sample, and Zevalkink *et al.* (1999), with an Indonesian sample, both found high levels of secure attachment and low levels of avoidant attachment.

Comparable studies are needed of infants naturally parented in Western cultures. One theory argues that rates of secure attachment should be even higher here, because factors such as poverty, social stress and child mortality are less. However, other factors, such as high concentrations of poverty in specific neighbourhoods, could result in different patterns of attachment between various sub-cultural groups. One problem with such studies is the possibility that maternally sensitive mothers are more likely to choose natural parenting procedures, which could bias findings.

The Strange Situation procedure contains elements unfamiliar to Dogon infants, like being left with strangers, thereby creating a risk that infants are being wrongly classified as insecurely attached (see Psychology in the real world, page 127).

RESEARCH IN FOCUS

1 McMahon *et al.*'s (2001) study on Dogon mothers was a cross-cultural study with findings compared to those from North America. It is also a quasi experiment, using the naturally occurring independent variable (IV) of different child-rearing practices, with the dependent variable (DV) being the resulting attachment patterns.

If behaviours are identical in different cultures, what does this suggest about the origins of those behaviours? If behaviours are different, what does this suggest?

2 The use of the Strange Situation in non-Western cultures is an example of an imposed etic. Explain what this means.

3 Why do some psychologists not consider quasi experiments to be true experiments?

4 In what situations would a quasi experiment be used?

5 Compile a list of the advantages and disadvantages of quasi experiments.

For information on research methods, see Chapter 7.

Research

Kyoung (2005) used the Strange Situation to compare 87 Korean families with 113 American families. There were notable differences: the Korean infants did not stay close to their mothers and when Korean mothers returned they were more likely to play with their infants. There were, however, a similar proportion of securely attached children in both cultures, suggesting that different child-rearing practices can lead to secure attachments.

Grossmann & Grossmann (1991) found that German infants tended to be classified as insecurely attached. This may be due to different child-rearing practices, as German culture requires 'distance' between parents and children. This indicates that there are cross-cultural variations in attachment.

Malin (1997) found that Aboriginal infants in Australia are discouraged from exploring by threats and distractions of food and so tend not to use their mothers as a safe base from which to explore, staying close to her at all times. This leads to the infants being incorrectly labelled as insecurely attached and often being put into care (see Psychology in the real world on page 127).

Evaluation

- The different patterns of reaction to the Strange Situation reflect cultural values and practices. For example, the greater frequency of insecure-avoidant children in Germany reflects a cultural emphasis on early independence training.
- The greater amounts of insecure-resistant attachment type in Japan may result from stress during the Strange Situation due to infants' unfamiliarity at being left with strangers. Japanese children are rarely separated from their mothers, so separation episodes are upsetting for these children. In contrast, Rogoff (2003) found that black American infants have many caregivers and are encouraged to be friendly to strangers and thus the Strange Situation activates their interest to explore. This shows that the Strange Situation has different meanings in different cultures and we need to examine child-rearing practices in order to interpret findings based on the Strange Situation.

The facts that attachment patterns vary cross-culturally, and that the Strange Situation may not be applicable in all cultures, suggest that attachment theory is culture-bound and applicable only to Western cultures.

PSYCHOLOGY IN THE REAL WORLD

The use of the Strange Situation with Australian Aboriginal children

Figure 3.14 Is the use of the Strange Situation to determine whether Aboriginal children should be in care culturally appropriate?

Soo See Yeo (2003) has concerns about the use of the Strange Situation by the New South Wales Children's Court in determining whether Aboriginal children should be placed into care. Aboriginal children are nine times more likely to be in care than non-Aboriginal Australian children and Aboriginal children make up 25 per cent of Australian children placed in care since 2000. Yeo believes an imposed etic may be at work, as assessments are being made by what the dominant Australian culture sees as good parenting, with a disregard for Aboriginal cultural practices, resulting in life-changing decisions being made based on evidence that is culturally inappropriate.

Aboriginal children are often cared for and breastfed by many women within their community. Children are cared for by women interchangeably and are often brought up by women who are not their natural mothers. Aboriginal children are rarely left in the presence of strangers. Lewis (2005) argues that Aboriginal child-rearing practices create a network of multi-layered relationships that create an effective safety net for children, while attachment theory only focuses on the linear relationship between a mother and her infant. Therefore the assessment of Aboriginal children in line with Australian cultural values may lead to Aboriginal children being incorrectly assessed as having insecure attachments, taken away from their communities and placed in care. So what at first may seem an excellent practical use of psychology for the benefit of society may actually be having negative implications due to the use of inappropriate methodology. Yeo argues that assessments should be made on the basis of Aboriginal people's cultural values if they are to be seen as valid.

STRENGTHEN YOUR LEARNING

1. Outline the procedure of Ainsworth's Strange Situation.
2. Describe the characteristics of the following (be sure to include characteristics of the mother as well as the infant):
   - (i) secure attachment
   - (ii) insecure-avoidant attachment
   - (iii) insecure-resistant attachment.
3. Ainsworth believed sensitive responsiveness to be crucial to the development of attachments. What is sensitive responsiveness?
4. Evaluate the Strange Situation giving points for and against the technique.
5. What might the evolutionary purpose of insecure attachment types be?
6. Use findings from van IJzendoorn & Kroonenberg's study to assess whether attachment types are cross-cultural.
7. Explain why McMahan *et al.* (2001) found no evidence of insecure-avoidant attachments among the Dogon people.
8. Refer to Yeo's (2003) criticisms of the use of the Strange Situation to assess whether Aboriginal children should be put in care to explain why the technique might not be applicable to all cultures.

ASSESSMENT CHECK

1 Match the following descriptions to the correct type of attachment in the table below. There will be one description left over. **[4 marks]**

A A strong and contented attachment, developing through sensitive responsiveness

B An attachment type where infants seek and reject intimacy

C An attachment type characterised by a lack of a consistent pattern of social behaviour

D An attachment type where infants shun intimacy and social interaction

E An attachment type that develops through classical conditioning

Description	Type of attachment
	Insecure-avoidant attachment
	Insecure-disorganised attachment
	Secure attachment
	Insecure-resistant attachment

2 Manon was born a few months ago and for all of her life has been looked after at home by her mum who is very caring and loving towards her. Like most babies, Manon sleeps a lot, but when she is awake she gets hungry easily and this makes her very grumpy, causing her to cry. When this happens her mother always feeds her immediately and this soothes Manon and makes her feel very content.

With reference to the above passage, explain how Manon may develop an attachment to her mother in terms of operant conditioning. **[4 marks]**

3 Outline what is meant by an internal working model. **[3 marks]**

4 Explain why the Strange Situation testing procedure may not be suitable for studying cultural variations in attachment. **[4 marks]**

5 Discuss Bowlby's monotropic theory. **[16 marks]**

6 Outline and evaluate learning theory as an explanation of attachment. **[12 marks]**

IN THE NEWS

Ψ The Psychological Enquirer

The monkey woman of West Yorkshire

(Adapted from Fortean Times, *June 2013)*

Figure 3.15 Marina Chapman with her family

Sixty-three-year-old Marina Chapman of Bradford, West Yorkshire at first seems a relatively unremarkable woman, but her life history is anything but unremarkable. For Marina, born in Colombia, South America, was abducted by child kidnappers, abandoned, and then raised by a troupe of about thirty Weeper Capuchin monkeys. It is estimated that she spent in excess of five years among her monkey family. When found, she displayed many of their habits, including their eating behaviour, such as putting nuts into a hollow and then cracking them with a branch or rock, and their cleaning behaviour, such as wiping her bottom with moss. She also exhibited monkey vocalisations, using them to scare off snakes and express her emotions. When discovered, she was naked and black with dirt with hair down to her knees. Ultimately, Marina made a full recovery, came to Yorkshire as a children's maid and married her husband John in 1978, a relationship that produced two daughters. She can still scale trees in seconds, smell ripe fruit from afar and tends to open food tubs with her teeth, but apart from these remnants of her monkey past, few people would suspect Marina's unusual upbringing.

Feral children, like Marina, are not common and it is difficult to verify claims about their upbringing, but what interests psychologists is the degree to which such individuals can become 'normal' human beings, especially the extent to which they can develop relationships with other humans. The evidence, scant though it is, suggests that feral children can develop warm, emotionally secure relationships, and become good parents themselves. Perhaps it is the quality of the attachments to their animal carers which permits this to occur.

ON THE WEB

An excellent *National Geographic* film about feral children can be viewed in five parts. Search YouTube for 'Feral Children part 1', 'Feral Children part 2', and so on. You can also search for Marina Chapman Facebook.

3.5 Bowlby's maternal deprivation hypothesis (MDH) (1951)

Bowlby's theory of monotropy, based on the survival value of attachments, is an evolutionary theory that sees healthy psychological development as dependent upon attachments forming between infants and mothers. However, his earlier **maternal deprivation hypothesis (MDH)** is more of a psychodynamic theory that reflects his working at that time within the psychodynamic approach (his focus would change later to more of an

Figure 3.16 Bowlby's maternal deprivation hypothesis is an explanation of what happens when attachments are broken

KEY TERMS

Maternal deprivation hypothesis (MDH) – an explanation of the consequences of disrupting attachment bonds that sees serious, permanent damage to children's development as inevitable

Separation – short-term disruption of an attachment bond

Deprivation – long-term disruption of an attachment bond

Privation – never having formed an attachment bond

evolutionary approach). Bowlby's maternal deprivation hypothesis (MDH) explains what happens if these attachments are broken. Bowlby argues that disruption of the attachment bond, even short-term disruptions, results in serious and permanent damage to a child's emotional, social and intellectual development.

The best way to examine the validity of the MDH is to assess the effects of disruption to infants' attachments and see if Bowlby's predictions are true. Disruptions can occur in three basic ways: short-term **separation**, long-term **deprivation** and **privation**. Institutionalisation can also be examined to see its effects on infant development.

Short-term separation

Short-term separation consists of brief, temporary separations from attachment figures, like attending day care, being left with a babysitter or a short period of hospitalisation. Bowlby (1969) described the distress caused by short-term separation in terms of the PDD model (protest, despair and detachment):

- **Protest** – the immediate reaction to separation involves crying, screaming, kicking and struggling to escape, or clinging to the mother to prevent her leaving. This is an outward, direct expression of the child's anger, fear, bitterness and confusion.
- **Despair** – protest is replaced by calmer, more apathetic behaviour. Anger and fear are still felt inwardly. There is little response to offers of comfort; instead the child comforts itself, for example by thumb-sucking.
- **Detachment** – the child responds to people again, but treats everyone warily. Rejection of the caregiver on their return is common, as are signs of anger.

Research

Robertson & Robertson (1971) reported their 'Young Children in Brief Separation' research as five films that showed how brief separation from their mothers affected children's mental state and psychological development. One film (1969) featured John aged 17 months, who had a close and stable relationship with his mother. He experienced extreme distress while spending nine days in a residential nursery while his mother was in hospital having a baby. On his mother's return, John was thrown into confusion and struggled to get away from her. The negative effects of this separation were evident even years later. John had appeared to go through the three stages of the PDD model, suffering serious, irreversible damage, lending support to Bowlby's MDH.

Douglas (1975) found that separations of less than a week for children below 4 years of age were correlated with behavioural difficulties, giving further support to the MDH.

Quinton & Rutter (1976) found greater behavioural problems in samples of adolescents separated briefly from attachment figures before 5 years of age through hospitalisation, than among adolescents who weren't hospitalised, supporting Bowlby's prediction of long-term developmental damage.

Evaluation

Robertson & Robertson (1971) took children facing short-term separations into their own home, providing them with an alternative attachment and a normal home routine and found this prevented the severe psychological damage, such as that seen with John. This suggests that negative outcomes are not inevitable, lessening support for Bowlby's MDH.

Much evidence linking short-term separation to negative outcomes is correlational and doesn't show causality. Kagan *et al.* (1978) found no direct causal link between separation and later emotional and behavioural difficulties.

Barrett (1997) argued that individual differences in reactions to short-term separation are important. For instance, securely attached children and more mature children cope better with separations, which suggests only some children experience distress.

PSYCHOLOGY IN THE REAL WORLD

James Robertson's film 'A Two-year-old Goes to Hospital' (1952) showed how separation from the primary attachment figure resulted in children experiencing distress. This work led to radical changes in hospital practices. Daily visiting for children was introduced, followed by unrestricted visiting and admission of the mother to hospital with the child. The Robertsons' 'Young Children in Brief Separation' research, reported in the five films 1967–1975, showed how a lack of opportunity to form alternative attachments resulted in the child experiencing extreme distress ('John, age seventeen months, for nine days in a Residential Nursery'). This research led to the closure of Residential Nurseries in favour of Foster Care for young children.

Figure 3.17 A cine-camera like the one the Robertsons used

ON THE WEB

A video clip from the Robertson & Robertson film, *The story of Laura*, can be seen on YouTube by searching for 'A two year old goes to hospital'.

A more detailed description of their films can be found at:

www.robertsonfilms.info/

Long-term deprivation

Long-term deprivation involves lengthy or permanent separations from attachment figures, most commonly due to divorce. Around 40 per cent of marriages in the UK end in divorce. Within two to three years of divorce, 50 per cent of divorced parents not living with their children (usually the father) have lost contact with their children. Long-term deprivation can also include death or imprisonment of a parent and resulting adoption by different caregivers.

Research

Rodgers & Pryor (1998) found that children experiencing two or more divorces have the lowest adjustment rates and the most behavioural problems, suggesting that continual broken attachments increase the chances of negative outcomes for children, supporting Bowlby's MDH.

Furstenberg & Kiernan (2001) found that children experiencing divorce score lower than children in first-marriage families on measures of social development, emotional well-being, self-concept, academic performance, educational attainment and physical health, suggesting that divorce has wide-ranging negative effects on children's development in line with Bowlby's MDH.

Schaffer (1996) found that nearly all children are negatively affected by divorce in the short term, though Hetherington & Stanley-Hagan (1999) found that only about 25 per cent of children experience long-term adjustment problems, with most children able to adapt. This suggests that negative outcomes to children's development are more short term than long term, lessening support for Bowlby's MDH.

Evaluation

- It seems logical that long-term separation has a greater negative effect upon children's development than short-term separation and research backs this up.
- Richards (1987) found that attachment disruption through divorce leads to resentment and stress, while the death of an attachment figure is more likely to result in depression than delinquency. This implies that separation through different causes produces different outcomes.
- Demo & Acock (1996) found that children vary widely in reactions to divorce, with some children developing better attachments to their parents after divorce. This may be due to the removal of the negative environment of marital conflict and also to parents being more attentive and supportive to children after divorcing. This suggests that divorce does not necessarily bring negative effects.
- Research has allowed psychologists to create strategies to help children cope with divorce. Some American states have a legal requirement for divorcing parents to attend an education programme that teaches them to understand and avoid the difficulties associated with disrupted attachments, like providing emotional warmth and support and keeping to consistent rules.

PSYCHOLOGY IN THE REAL WORLD

Figure 3.18 Is prison the best place for a young child? There are seven mother and baby units in English prisons

How can we apply what we know about the effects of attachment disruption to mothers and pregnant women in prison? Should young children be separated from their mothers in such circumstances or be allowed to stay with their mothers in prison? The facts make interesting reading. In England in 2013 there were 3,893 prisoners in thirteen women's prisons, seven of which have mother and baby units (MBUs). In 2006, 55 per cent of female prisoners had a child under 16 years and 33 per cent a child under 5 years of age. Between 2005 and 2008, 382 babies were born in prison. However, there are only places for 80 children in the mother and baby units, two of which allow babies to stay with their mothers up to 9 months of age and five up to the age of 18 months. Women with a poor past history of parenting are less likely to be given places, but each application is assessed on an individual basis by a multi-disciplinary team, focusing on the best interests of the child. For example, if a mother has an 18-month-old child in an MBU, but is due for release shortly, the child may stay with her. If a mother is serving a long sentence and is given a place on an MBU then in due course she will be separated from her child, though this is planned well in advance with social services and other family members involved.

Privation

Privation concerns children who have never formed an attachment bond. Privation is more likely than deprivation to lead to lasting damage, but research results are contradictory, with some individuals fully recovering, while others make little if any improvement. As cases of privation are relatively rare, they are generally researched through case studies.

Research

Freud & Dann (1951) reported on six children placed in a Nazi concentration camp, who were orphaned at a few months of age and had formed no maternal attachments. They were taken at age 3–4 to the Bulldog Bank Centre in West Sussex. They had little language, did not know what to do with toys and were hostile to adults. They were, however, devoted to each other and refused to be separated. Very gradually they became attached to their carers and made rapid developments in physical and intellectual capabilities. It was not possible to trace all the children as adults, but those that were traceable made good recoveries and had successful adult relationships, lessening support for Bowlby's MDH.

Figure 3.19 The Bulldog Bank children were survivors of Nazi concentration camps who had suffered extreme privation

Koluchova (1972, 1991) reported on identical twins, Andrei and Vanya, whose mother died soon after their birth. When their father remarried, the stepmother locked them in a cellar for five-and-a-half years, giving them regular beatings. The father was mainly absent from the home due to his job. Discovered at age 7, the twins were underdeveloped physically, lacked speech and did not understand the meaning of pictures. Doctors predicted permanent physical and mental damage. The boys were given physical therapy and put into a school for children with severe learning difficulties and were then adopted by two child-centred sisters. At age 14 their intellectual, social, emotional and behavioural functioning was near normal. As adults, both married and had children; one worked as an instructor and the other was a computer technician. Both have enjoyed successful adult relationships and are still close to each other.

Curtiss (1977) and Rymer (1993) reported on Genie, a girl denied human interaction, beaten and strapped into a potty seat until discovered at age 13. She could not stand up or speak, spending most of her time spitting. She received years of therapy and was tested constantly, developing some language abilities and improving her IQ from 38 in 1971 to 74 in 1977. At 18 she returned to the care of her mother, staying for only a few months before moving to a succession of six different foster homes, where she was further abused. Genie then deteriorated physically and mentally, before going to live in a home for people with learning difficulties.

Evaluation

- It may be that the close attachments the Czech twins and the Bulldog Bank children had to each other explain why they made lasting recoveries, while Genie, who had no attachments, made little progress. However, Moskowitz (1983) reports that, if true, then the Bulldog Bank children, who were all individually adopted and never saw each other again, should have exhibited the effects of disrupted attachment from each other, which they didn't.
- Case studies are usually used to study extreme privation, as it would be unethical or impractical to use most other research methods.
- Case studies are dependent upon retrospective memories that may be selective and even incorrect. There is no way of knowing fully what happened to these individuals before discovery. Genie's mother, for example, often gave conflicting stories of what happened to her daughter.
- Bowlby's viewpoint that the negative effects of maternal deprivation are irreversible seems overstated. The children whose privation experiences were followed by positive experiences made good recoveries.

RESEARCH IN FOCUS

1 For what reasons are case studies mainly used to investigate examples of privation?

2 Compile a list of the strengths and weaknesses of case studies.

For information on research methods, see Chapter 7.

KEY TERMS

Institutional care – childcare provided by orphanages and children's homes

Affectionless psychopathy – an inability to show affection or concern for others

Institutionalisation

Institutionalisation concerns the effects upon attachments of care provided by orphanages and residential children's homes, and Bowlby's MDH was largely based upon studies conducted in the 1930s and 1940s of children raised in such institutions. **Institutional care** involves distinctive patterns of attachment behaviour and so can be regarded as a phenomenon in its own right; it often involves a mix of privation and deprivation effects. Institutionalised children often show a distinctive attachment behaviour called disinhibited attachment, characterised by clingy, attention-seeking behaviour and indiscriminate sociability to adults.

Research

Goldfarb (1943) compared fifteen children raised in social isolation in institutions from 6 months of age until $3\frac{1}{2}$ years of age with fifteen children who went straight from their natural mothers to foster homes. At age 3, the socially isolated children lagged behind the fostered children on measures of abstract thinking, social maturity, rule following and sociability. Between the ages of 10 and 14 years, they continued to perform poorly, with an average IQ of 72 compared to the fostered children's IQ of 95.

Spitz (1946) studied children raised in poor-quality South American orphanages. Members of staff were overworked and untrained and rarely talked to the children or picked them up, even for feeding. Children received no affection and had no toys. The children displayed anaclitic depression, a reaction to the loss of a love object, showing fear, sadness, weepiness, withdrawal, loss of appetite, weight loss, inability to sleep and developmental retardation, highlighting the negative effects of institutionalisation upon attachments.

Bowlby (1944) compared 44 juvenile thieves with a control group of non-thieves who had suffered emotional problems. Thirty-two per cent of the thieves exhibited **affectionless psychopathy**, lacking a social conscience. None of the control group was classed in this way. Eighty-six per cent of the affectionless psychopaths had experienced maternal separation compared to 17 per cent of the thieves who were not affectionless psychopaths. This supports Bowlby's idea that maternal deprivation can have serious and long-lasting negative effects.

Tizard & Hodges (1978) studied children placed into institutional care in the first four months of life. These children were privated as they had not formed attachments with their mothers. High staff turnover and the institute's policy of not letting carers form relationships with children prevented alternative attachments forming. Some children remained in the institution, some were adopted and some were restored to their natural homes. There was also a control group of children raised in their natural

homes. The children were assessed at ages 4 and 8, and then again at age 16. Children who remained in the institution had no strong attachments and had problems relating to peers. Adopted children formed strong attachments within their adoptive families, but had problems with relationships outside their families. The restored children tended to have poor family and peer relationships and behavioural problems. This suggests that institutional care has long-lasting negative effects, though the development of close attachments is possible with loving care, as provided by adoptive parents.

Rutter (2006) found that the multiple carers provided by children's residential homes led to the formation of disinhibited attachments, supporting the idea of institutional care creating distinct attachment types.

RESEARCH IN FOCUS

1. In his study of juvenile thieves, Bowlby carried out interviews with children and mothers. Why is an interview a form of self-report?
2. What other forms of self-report are there?
3. Interviews can be structured, semi-structured or unstructured. Explain the differences between these types, giving advantages and disadvantages of each.
4. Although interviews are relatively easy to conduct and generate lots of data, they do have faults. Explain the following weaknesses:
   - (i) leading questions
   - (ii) social desirability bias
   - (iii) idealised answers (see the section on interviews, page 297).

For information on research methods, see Chapter 7.

Evaluation

- The early studies of children raised in institutions that Bowlby based his MDH on had serious methodological flaws. For example, the Goldfarb study did not use random samples, so it is possible that the fostered children were naturally brighter, more sociable and healthier than the socially isolated children and that is why they were fostered rather than placed in institutional care. Also, the institutions provided unstimulating environments and it may have been the lack of stimulation rather than the absence of maternal care that led to retarded development.
- In Tizard & Hodge's study the more socially skilled children may have been adopted and so found it easier to form attachments within their adoptive families. The study also suffered from atypical sample attrition, where, over time, a certain type of participant (for example, the more troubled children) drops out, thus affecting the reliability of the results.

YOU ARE THE RESEARCHER

In Bowlby's (1944) juvenile thieves study he compared thieves and non-thieves by interviewing the thieves, non-thieves and their mothers. Imagine you are conducting this study as a structured interview. Create a set of questions that are relevant to the factors being studied that generate both quantitative and qualitative data. How would both types of data be analysed?

For information on research methods, see Chapter 7.

ON THE WEB

The documentary film *Genie (Secret of the Wild Child)*, which tells the tale of her attempted rehabilitation, can be seen on YouTube by searching for 'Genie (Secret of the Wild Child)'.

'There can be no keener revelation of a society's soul than the way in which it treats its children.'

Nelson Mandela (1995)

Romanian orphan studies

In the 1990s media attention was directed to the horrific conditions endured by children in Romanian orphanages. There was a lack of nourishing food, toys and social interactions and little in the way of loving care. Divided into age groups, the orphans had little contact with older and more able peers. Many of these children were adopted and taken to more enriching environments in other countries where their progress has been monitored by psychologists in a series of research studies, generally to see if the effects of institutional care and privation can be overcome in the long term.

KEY TERM

Romanian orphan studies – research conducted on Romanian orphans adopted by British families, which assessed the degree to which the effects of privation and institutional care could be overcome by the provision of enriching and nurturing environments

CONTEMPORARY RESEARCH

Developmental catch-up, and deficit, following adoption after severe global early privation – Michael Rutter *et al.* (1998)

Professor Michael Rutter and his team were interested in seeing whether the effects of institutional care and privation could be overcome by the long-term provision of a more nurturing and enriching environment. First reported in 1998, this is an on-going longitudinal study showing developmental trends (changes over time).

Figure 3.20 Professor Rutter's studies of Romanian orphans have aimed to see if the effects of institutionalisation can be overcome through loving care by adoptive parents

Aim

To assess whether loving and nurturing care could overturn the effects of privation the children had suffered in Romanian orphanages.

Procedure

1 This was a longitudinal study, incorporating a quasi experiment. The independent variable (IV) was the age of adoption, with three age groups being studied:
Condition 1: Children adopted before the age of 6 months
Condition 2: Children adopted between 6 months and 2 years
Condition 3: Children adopted after 2 years

2 The dependent variable (DV) was the children's level of cognitive functioning.

3 111 Romanian orphans were initially assessed for height, head circumference and cognitive functioning on arrival in Britain. All children were again assessed at age 4. A control group of 52 British adopted children were also assessed (to ascertain whether negative effects were due to separation from carers or the institutional conditions in Romanian orphanages).

Findings

1 Around 50 per cent of the Romanian orphans were retarded in cognitive functioning at initial assessment and most were underweight. The control group did not show these deficits.

2 At age 4 years, the Romanian orphans showed great improvements in physical and cognitive development, with the orphans adopted before 6 months of age doing as well as the British adopted children.

Conclusions

The negative effects of institutionalisation can be overcome by sensitive, nurturing care.

As the British adopted children (who had been separated from their mothers) did not suffer developmental outcomes, it can be seen that separation from carers will not on its own cause negative developmental effects.

Evaluation

Children have only been assessed up to the age of 4 years, so subsequent follow-ups will be required to assess the long-term effects of institutionalisation and the effects of subsequent enriching environments.

Only some of the children received detailed clinical investigations, so it is difficult to fully generalise the findings.

Because the children were not studied while in the Romanian orphanages, it is not possible to state which aspects of privation were most influential.

Follow-up and associated research

O'Connor *et al.* (1999) reported that the most enduring negative effects were difficulties making attachments, with many orphans displaying 'indiscriminate friendliness' (when children interact with strangers in the same way they would with a primary caregiver). These effects appear to be positively correlated with the length of time children were institutionalised.

O'Connor *et al.* (2000) performed a follow-up study at age 6 years, finding the improvements were maintained, though not advanced upon.

Rutter *et al.* (2001) performed a follow-up study, finding attachment problems, hyperactivity and cognitive impairment to be associated with institutionalisation, especially in children enduring long periods of institutionalisation, though 20 per cent of such children showed normal functioning. Emotional problems, poor peer relations and behaviour problems were not associated with institutionalisation. This suggests specific negative effects are related to long-term institutionalisation, but only in certain types of children.

Rutter (2007) followed up the same children at age 11, finding that many showed normal levels of functioning, but about 50 per cent of those showing disinhibited attachments at age 6 were still doing so.

Morison & Elwood (2005) found similar results with a group of Romanian orphans adopted by Canadian adoptive parents. This suggests Rutter's findings are reliable.

ON THE WEB

Watch Professor Michael Rutter talk about his Romanian orphans studies by searching YouTube for 'Professor Sir Michael Rutter'.

STRENGTHEN YOUR LEARNING

1. What is meant by the following? Give an example of each.
   - (i) Separation
   - (ii) Deprivation
   - (iii) Privation
2. Outline the PDD model.
3. How did the Robertsons discover that the effects of PDD could be avoided?
4. To what extent does research into the effects of short- and long-term disruption of attachment bonds support Bowlby's MDH?
5. Why is privation generally studied by the use of case studies?
6. Explain why the Czech twins and the Bulldog Bank children may have recovered from the effects of privation, but Genie didn't.
7. What distinctive attachment behaviour do institutionalised children often show and what are the characteristics of this behaviour?
8. What criticisms can be made of the early institutionalisation studies that Bowlby based his MDH upon?
9. What do studies of Romanian orphans tell us about whether the effects of institutional care can be overcome?

IN THE NEWS

Ψ The Psychological Enquirer

Can lesbians be good parents?

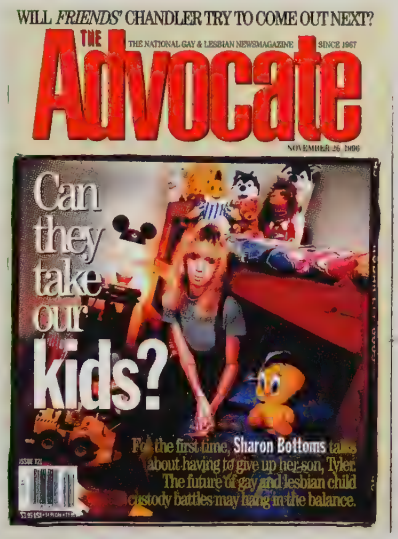

WILL FRIENDS' CHANDLER TRY TO COME OUT NEXT?
THE Advocate
THE NATIONAL GAY & LESBIAN NEWSMAGAZINE SINCE 1967
Can they take our kids?
For the first time, Sharon Bottoms talks about having to give up her son, Tyler. The future of gay and lesbian child custody battles may hang in the balance.

Figure 3.21 Sharon Bottoms had her child taken away from her as she was in a lesbian relationship

Sharon Bottoms and husband Dennis (of Virginia, USA) split up after a few months of marriage, only for Sharon to then discover that she was pregnant. Sharon moved back in with her mother and on July 5th 1991 her son Tyler Dovstov was born. Subsequently, Sharon started dating April Wade and in late 1992 the couple held a 'commitment ceremony' and set up home together. Disgusted at her daughter's lesbian lifestyle, Sharon's mother Kay took her own daughter to court. Numerous witnesses, including her ex-husband, testified that Sharon was a good mother and Sharon also reported how her mother's partner had sexually abused her as a child. However, Judge Bruford Parsons stated that the gay couple's habit of kissing and cuddling in front of the boy would negatively affect him, even though court-appointed psychologists found no evidence of Tyler suffering ill effects. Kay won custody of her grandson.

A year later, an appeals court overturned the judgement, returning Tyler to his mother's care. But in 1995, the Virginia Supreme Court backed the original ruling, citing that Sharon 'refuses to subordinate her own desires and priorities to the child's welfare' and that growing up with lesbians would 'inevitably afflict the child's relationships with its peers and the community at large'.

Sharon Bottom's story was made into a film, *Two moms for Zachary*, but she never regained custody of her son and was only granted very limited visiting rights.

The issue over who makes good parents is a contentious one, with some arguing that parenting other than that by a man and a women, even indeed than that of a married man and woman, is vastly inferior. However, psychological evidence suggests that it is the quality of parenting that is of prime importance not the gender, marital status or sexuality of the parents. Indeed, research from Birkbeck College, London, suggests same-sex couples make better parents, as their children can never be conceived accidentally. The rate of homosexuality among children raised by homosexuals is also reported to be no different to that of children raised by heterosexual parents.

3.6 The influence of early attachment on childhood and adult relationships

Psychologists have been interested in seeing whether attachments made in infancy have an effect on relationships individuals have in childhood and as adults. The **continuity hypothesis** sees children's attachment types being reflected in their later relationships. This idea is based upon the **internal working model** (see page 118), where an infant's primary attachment forms a model (template) for future relationships. In other words there will be continuity between early attachment experiences and later relationships.

KEY TERMS

Continuity hypothesis – the idea that there is consistency between early emotional experiences and later relationships

Internal working model – a mental representation of an individual's relationship with their primary caregiver that becomes a template for future childhood and adult relationships

Childhood relationships

Research indicates that there is continuity between early attachment styles and the quality of childhood relationships. Also, evidence suggests that children who form attachments to each other early in life will not generally go on to form adult sexual relationships with each other.

Research

Youngblade & Belsky (1992) found that 3–5-year-old securely attached children were more curious, competent, empathetic, resilient and self-confident, got along better with other children and were more likely to form close friendships.

Mullis *et al.* (1999) reported that in late childhood attachments that are made to peers reflect those made to parents in infancy. Laible (2000) backed this up by finding that in late childhood individuals transfer attachment behaviours learned in childhood to social situations and peer groups. This supports the idea of continuity from early attachments and the internal working model.

Westermarck (1891) reported that children who form close friendships in the first six years of life do not generally go on to form adult sexual relationships with each other, which suggests early attachments do affect childhood and adult relationships.

Shepher (1971) examined 3,000 Israeli marriage records to find that no children reared together on a kibbutz got married to each other, which backs up Westermarck's findings and supports the idea that early attachments influence later relationships.

Evaluation

- Attachments formed between infants and their carers have a large influence in determining the quality of subsequent childhood relationships, with those forming secure attachments seeming to profit best in terms of developing positive personal characteristics and social abilities.
- Early attachment types can be seen to influence the development of individual differences in cognitive ability, emotional responses and social skills, all of which influence the quality of later childhood relationships.
- Perceiving the quality of later relationships as being caused solely by the quality of early attachments is somewhat deterministic. It is likely that other factors are influential too, like financial pressures or age differences between partners.
- The fact that children who form attachments to each other in early life do not generally go on to form adult sexual relationships with each other suggests it is an evolutionary anti-incest device that serves to stop related individuals breeding, as such relationships could lead to the birth of children with genetically transmitted disabilities.

Adult relationships

Research indicates an intergenerational continuity between adults' attachment types and their children, including children adopting the parenting styles of their own parents. There also appears to be continuity

Figure 3.22 Research suggests that individuals who form secure infant attachments go on to enjoy loving, long-lasting adult relationships

between early attachment styles and the quality of later adult relationships. However, those who fail to achieve secure attachments in childhood are not necessarily condemned to a life of broken relationships, divorce and a cycle of inadequate parenting, as research indicates that it is possible for such individuals to develop secure adult relationships. It should be noted though that not all evidence supports the idea of continuity between early attachments and later relationships.

CLASSIC RESEARCH

Romantic love conceptualised as an attachment process – Hazan & Shaver (1987)

The researchers were interested in examining the idea that early attachment styles would be reflected in adult romantic relationships, as predicted by Bowlby.

Aims/Hypotheses

To explore the possibility that attachment theory offers a perspective on adult romantic love and to create a framework for understanding love, loneliness and grief at different points in the life cycle.

It was predicted that:

1 There would be a correlation between adults' attachment styles and the type of parenting they received.

2 Adults with different attachment styles will display different characteristic mental models (internal representations) of themselves and their major social-interaction partners.

Procedure

1 Respondents to a 'love quiz' in a local newspaper were asked which of three descriptions best applied to their inner feelings about romantic relationships (see Table 3.7). These descriptions related to secure attachments, insecure-avoidant attachments and insecure-resistant attachments.

2 Participants also completed a checklist describing childhood relationships with parents, relating to the same attachment types. Two separate samples were tested.

3 Sample one comprised 205 men and 415 women, between 14 and 82 years of age, 91 per cent describing themselves as heterosexual. 42 per cent were married, 28 per cent were divorced or widowed, 9 per cent were co-habiting and 31 per cent were dating. (Some fitted more than one category.)

4 Sample two comprised 108 students (38 men and 70 women) who answered additional items focusing more on the 'self' side of the mental model (as opposed to their partner), as well as items measuring loneliness.

Findings

Table 3.7 below shows the percentage of respondents classified as securely attached, insecure-avoidant or insecure-resistant.

1 In both samples, those described as securely attached described the most important love relationship they ever had as 'happy, friendly and trusting'. These participants had longer lasting relationships and if they married tended not to divorce.

2 Securely attached participants expressed belief in lasting love. They found others trustworthy and had confidence in their self as likeable.

3 Insecure-avoidant participants were more doubtful about the existence or durability of romantic love. They also maintained they didn't need love partners to be happy.

4 Insecure-avoidant participants expressed more self-doubts, compared with both other types, but compared with the insecure-resistant participants didn't repress feelings of security.

5 Both insecure types were vulnerable to loneliness; the insecure-resistant (sample two) being most vulnerable.

Classification	% of respondents	Response
Securely attached	56 (Both samples)	I find it easy getting close to others and am comfortable depending on them and having them depend on me. I don't worry about being abandoned or about someone getting close to me.
Insecure-avoidant	23 (Sample one) 25 (Sample two)	I am uncomfortable being close to others; I find it difficult to trust them, difficult to depend on them. I am nervous when anyone gets close, and love partners want me to be more intimate than I feel comfortable being.
Insecure-resistant	19 (Sample one) 20 (Sample two)	I find others are reluctant to get as close as I'd like. I worry my partner doesn't really love me or won't stay with me. I want to merge completely with another person, and this desire scares people away.

Table 3.7 The percentage of respondents classified as securely attached, insecure-avoidant or insecure-resistant.

Conclusions

The percentages of adults in the different attachment types match those of children in Ainsworth's Strange Situation studies.

The correlation between adults' attachment style and their memories of parenting style they received is similar to Ainsworth's findings, where children's attachment styles were correlated with the degree of sensitivity shown by mothers.

Adults' mental models differ according to attachment styles. Securely attached are more positive and optimistic about themselves and (potential) love partners, compared with either insecurely attached types.

People with insecure attachment are vulnerable to loneliness.

Evaluation

The researchers provided a typical account of the processes involved in romantic attachment and an understanding of individual differences in adult relationship styles, as well as a connection between infant attachment theory and theories of romantic love, which stimulated research in the area.

The research showed continuity of childhood attachment style into adulthood doesn't always occur, i.e. insecurely attached children don't necessarily become insecurely attached adults. Continuity decreases as individuals progress further into adulthood. The average person participates in several important friendships and love relationships, providing opportunities for revising mental models of self and others. Main *et al.* (1985) support this optimistic view, finding that some adults insecure in relationships with parents produced securely attached children. They had mentally worked through their unpleasant experiences and now had mental models of relationships more typical of the securely attached.

Attachment types identified by the Strange Situation only relate to the quality of relationship with one person. Therefore an adult's choice of a paragraph describing their attachment style might only relate to their current relationship.

Research

McCarthy (1999) assessed the quality of adult relationships of 40 women aged 25 to 44 years with childhood insecure attachments. Women with insecure-avoidant attachments had less successful adult romantic relationships, while those with insecure-resistant attachments had problems forming non-romantic adult friendships, supporting the idea of an internal working model.

Kirkpatrick & Davis (1994) studied 300 dating couples for three years, finding that those identified as having secure childhood attachments were more likely to have stable and satisfying relationships, supporting the idea of continuity from an internal working model.

Belsky (1999) reported that women with childhood secure attachments experienced less conflict with husbands on topics related to time spent together and household division of labour than insecurely attached women. They were also more likely to manage conflict in mutually focused ways, explaining why they experience less conflict in the first place and why their relationships are mutually rewarding. This applied to both dating and married couples. Securely attached individuals were also more committed to relationships and felt greater love for their partners, consistent with Hazan and Shaver's 'secure' description of feelings about romantic relationships.

Brennan & Shaver (1995) found that individuals classified as insecure-avoidant were willing to engage in sex in the absence of strong feelings of love or an enduring relationship. Similarly, Hazan & Shaver (1994) found that such individuals were more likely to have one-night stands and sex outside established relationships and they preferred purely sexual contact, for example oral and anal sex, to more emotionally intimate sexual contact, such as kissing and cuddling. This again supports the concept of the internal working model.

Kunce & Shaver (1994) found that women classed as having childhood insecure-resistant attachments reported the highest levels of 'compulsive caregiving': that is, they were most likely to agree with statements such as 'I can't seem to stop from "mothering" my partner too much.'

Evaluation

Wood *et al.* (2003) believe the quality of relationships results from the interaction of two people's attachment styles. Therefore insecurely attached people can have secure relationships if they are in relationships with securely attached people.

The internal working model is not fully supported; Steele *et al.* (1998) found only a small correlation of 0.17 between having a secure attachment type in childhood and early adulthood, while Zimmerman *et al.* (2000) found that attachment style at 12–18 months of age did not predict the quality of later relationships, while life events experienced, such as parental divorce, had a much larger influence. Also, Hamilton (1994) found that securely attached children went on to have insecurely-attached relationships if they had experienced negative life events.

The **temperament hypothesis** sees the quality of adult relationships as being determined biologically from innate personality, suggesting that attempts to develop better quality relationships by changing people's attachment styles to more positive ones wouldn't work.

KEY TERM

Temperament hypothesis – the idea that the nature of infants' attachments is due to innate personality factors

YOU ARE THE RESEARCHER

Design a study that assesses whether early attachment types are reflected in later childhood and adult relationships. What kind of a study would this be? How would you measure attachment types in infancy, childhood and adulthood? How would you make sure your measurements were reliable?

For information on research methods, see Chapter 7.

STRENGTHEN YOUR LEARNING

1 What is the connection between an internal working model and the continuity hypothesis?

2 Why might children who form close early attachments to each other not go on to form adult sexual relationships with each other?

3 (i) How did Hazan & Shaver (1987) investigate the relationship between early childhood and later adult relationships?

(ii) What did Hazan & Shaver's findings suggest about the validity of an internal working model?

4 To what extent does research evidence support the continuity hypothesis?

ASSESSMENT CHECK

1 Place a letter 'I' next to the three statements below that relate to the effects of institutionalisation. Three statements will be left over. **[3 marks]**

Children are closely attached to one person.	☐
Children show a fear of strangers.	☐
Children display retarded cognitive abilities.	☐
Children are often underweight.	☐
Children display attention-seeking behaviour.	☐
Children are well-liked by their peers.	☐

2 Two-year-old Ruby has a secure, loving relationship with her mother, but her mother has to go into hospital for a few days to have a minor operation. During this time, her mother has made arrangements for Ruby to go and stay with someone she has never met before.

Explain strategies that could be used to reduce any potential negative effects of Ruby's separation from her mother. **[4 marks]**

3 Outline the procedure and findings of one or more studies of Romanian orphans. **[6 marks]**

4 Explain one strength and one limitation of the case study method when studying privation. **[2 + 2 marks]**

5 Discuss the influence of early attachment on childhood and/or adult relationships. **[16 marks]**

6 Outline and evaluate Bowlby's theory of maternal deprivation. **[12 marks]**

SUMMARY

How attachments form

- Attachments are developed and maintained through interactions between carers and infants and develop in several distinct stages.
- Most children develop multiple attachments, with a debate between psychologists as to whether attachments are of equal value or whether there is one prime attachment.
- A debate also exists as to the importance of the father as an attachment figure.

Explanations for attachment

- Bowlby was heavily influenced by animal studies, such as those by Harlow and Lorenz.
- The learning theory sees attachments as acquired through experience via the process of association.
- Bowlby's monotropic theory sees infants as having an innate tendency to become attached to one particular individual.
- Bowlby argued for a critical period, a specific time period within which an attachment must form.
- Bowlby also saw attachments as forming an internal working model, a template for future relationships.

The Strange Situation

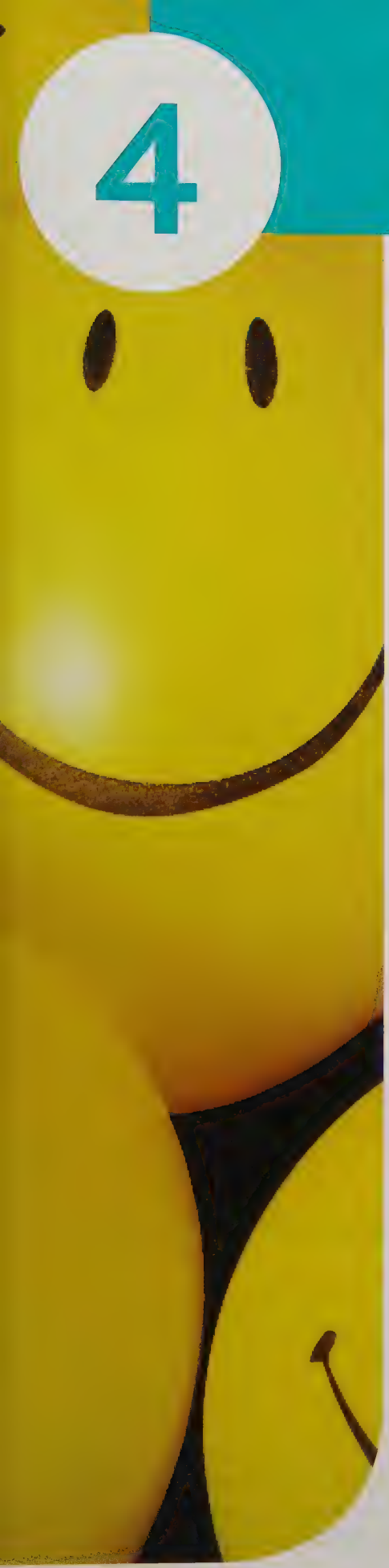
- Ainsworth developed the 'Strange Situation', a method of assessing types of attachment.
- Cultural variations exist in attachment patterns and the Strange Situation may not be suited for use in all cultures.

The consequences of disrupting attachment

- Bowlby's maternal deprivation hypothesis (MDH) argues that serious, irreversible damage will occur if attachment bonds are broken.
- Romanian orphan studies suggest that the negative effects of institutionalisation can be overcome by sensitive, nurturing care.

The influence of early attachments upon childhood and adult relationships

- Evidence suggests that a degree of continuity exists between early attachment types and the quality of later relationships.



4 Individual differences: psychopathology

Introduction

Psychology generally focuses upon the scientific outlook of finding what qualities people have in common. Most research even involves analysing data to find averages in order to establish 'truths' about the mind and behaviour. However, individual differences is a branch of psychology that focuses more upon how people differ from each other. The particular topic featured here is that of psychopathology, with specific focus on:

- Definitions of abnormality
- Characteristics of phobias, depression and OCD
- The behavioural approach to explaining and treating phobias
- The cognitive approach to explaining and treating depression
- The biological approach to explaining and treating OCD.

Understanding the specification

- Students are required to have knowledge of four named *definitions of abnormality: deviation from social norms, failure to function adequately, statistical infrequency and deviation from ideal mental health.*
- Three specified *mental disorders – phobias, depression and OCD* – must each be able to be described in terms of their emotional, cognitive and behavioural characteristics.
- Phobias must additionally be able to be explained from a *behaviourist viewpoint*, using the *two-process model of classical and operant conditioning*, with an additional knowledge also required of the behaviourist treatment of systematic desensitisation, including relaxation, use of hierarchy and flooding.
- *Depression* must be explained from a *cognitive viewpoint*, using Beck's negative triad and Ellis' ABC model, with an additional knowledge also required of *cognitive behavioural therapy*, including challenging irrational thoughts, as again this is directly referred to.
- *OCD* must be explained from a *biological viewpoint*, using genetic and neural explanations with an additional knowledge also required of drug therapy, as this is directly referred to.

These are the basic requirements of the specification. However, other relevant material is included to provide depth and detail to your understanding.

IN THE NEWS

Ψ The Psychological Enquirer

The long walk home – naked

Figure 4.1 Stephen Gough's second naked ramble (with friend)

It is ex-Royal Marine Stephen Gough's heartfelt belief that being naked in public is a fundamental freedom and he wishes by doing so to separate nudity from sexual behaviour. So in 2003–04 and again in 2005–06 he walked from Land's End to John O'Groats in just his boots and occasionally (on sunny days) a hat. He was arrested 18 times and has spent 6 years in prison (naked) in isolation. His spells of freedom are often for a few seconds, with arrest following his refusal to wear clothes on leaving prison. The cost for his imprisonment now runs into several hundred thousand pounds. In 2012, he was allowed to walk home from Scotland to Hampshire, as long as he did so with 'consideration for others'. Three days later, he was arrested for walking naked past a children's playground in Fife and put back in prison, with Gough refusing to allow social workers to assess his mental health. The authorities have generally seen him as confrontational, intolerant and inconsiderate, and in January 2014, he was again jailed for 16 months for breaking an ASBO to not be naked in public.

Stephen Gough's behaviour by many definitions of abnormality would be seen as abnormal; he is deviating from the social norm of being dressed in public, displaying elements of failure to function adequately (such as displaying behaviour that causes offence to others), showing statistically infrequent behaviour (being naked in public) and deviating from ideal mental health (such as not having environmental mastery by not being competent in all aspects of life). But then again, many of us would say he's quite sane and is just behaving according to his principles, and that it's the objectors to his behaviour who have a problem.

ON THE WEB

Watch a BBC documentary about Stephen Gough by searching for 'Stephen Gough Naked Rambler' on YouTube.

4.1 Definitions of abnormality

'To study the abnormal is the best way to understand the normal.'
William James (1890)

'Perfect sanity is a myth propagated by straitjacket salesmen.'
Rebecca McKinsey (2013)

'. . . and then I decided I was a lemon for a couple of weeks.'
Ford Prefect in *The Hitchhiker's Guide to the Galaxy* by Douglas Adams (1978)

KEY TERMS

Definitions of abnormality – criteria for determining psychological and behavioural states that lead to the impairment of interpersonal functioning and/or distress to others

Abnormality – a psychological or behavioural state leading to impairment of interpersonal functioning and/or distress to others

Abnormality is difficult to define; psychologists disagree about the causes of mental disorders and how they reveal themselves. One point of view sees abnormality resulting from flawed biology, another that abnormality is due to 'incorrect' learning or defective thought processes. Others argue that mental disorders originate from problems of the mind and personality. Different viewpoints have been favoured at different times and across different cultures. Rosenhan & Seligman (1995) believe that normality is

merely an absence of abnormality. This means that by defining abnormality, decisions are being made about what is normal.

Four criteria for defining abnormality are examined here, each with its strengths and weaknesses.

The deviation from social norms definition

Each society has norms, unwritten rules for acceptable behaviour, for example not being naked in public. Any behaviour that varies from these norms is abnormal, so abnormal behaviour is, therefore, behaviour that goes against social norms (**deviation from social norms**). The definition draws a line between desirable and undesirable behaviours and labels individuals behaving undesirably as social deviants; it allows interference into their lives in order to help them, for instance putting them into a mental hospital. These norms will vary across cultures, situations, ages and even gender, so that what is seen as acceptable/normal in one culture, situation, age group or gender type will not be in others. One important consideration is the degree to which a social norm is deviated from and how important society sees that norm as being.

KEY TERM

Deviation from social norms – a definition that sees abnormality as behaviour which violates accepted social rules

Strengths of the definition

- **Helps people** – the fact that society gives itself the right to intervene in abnormal people's lives can be beneficial, as such individuals that need it may not be able to get help themselves.
- **Social dimension** – the definition gives a social aspect to the idea of abnormality, which offers an alternative to the isolated 'sick-in-the-head' individual.
- **Situational norms** – the definition considers the social aspects of behaviour; a behaviour seen as abnormal in one setting is regarded as normal in another; for instance while being naked in town is seen as abnormal it's regarded as normal on a nudist beach.
- **Developmental norms** – the definition establishes what behaviours are normal for different ages; for example filling a nappy aged 2 is considered normal, perhaps not so if you're 40.
- **Distinguishes between normal/abnormal** – the definition gives a clear indication of what is and isn't seen as normal behaviour.
- **Protects society** – the definition seeks to protect society from the effects an individual's abnormal behaviour can have on others.

Limitations of the definition

- **Subjective** – social norms are not real, but are based on the opinions of ruling elites within society rather than majority opinion. Social norms are then used to 'control' those seen as a threat to social order. A true definition of abnormality should be objective and free from subjective factors. Szasz (1960) sees the term 'mental illness' as a form of social control. Those labelled as abnormal are discriminated against. Some countries, for example China, have been known to label political opponents as abnormal and confine them to mental institutions.
- **Change over time** – the norms defined by society often relate to moral standards that vary over time as social attitudes change. As an example,

homosexuality was not removed from the International Classification of Diseases classification of mental disorders until 1990.

- **Individualism** – those who do not conform to social norms may not be abnormal, but merely individualistic or eccentric and not problematic in any sense.
- **Ethnocentric bias in diagnosis** – Western social norms reflect the behaviour of the majority 'white' population. Deviation from these norms by ethnic groups means that ethnic minorities are over-represented in the mental illness statistics. Cochrane (1977) found that black people were more often diagnosed as schizophrenic than white people or Asians. However, while this high rate of diagnosis for black people is found in Britain, it is not found in such countries as Jamaica where black people are the majority, suggesting a cultural bias in diagnosis among British psychiatrists.
- **Cultural differences** – social norms vary within and across cultures and so it is difficult to know when they are being broken. If a male wears a skirt does it indicate abnormality? Would the same be true of a Scottish male wearing a kilt? Therefore this definition of abnormality is an example of **cultural relativism**.

The failure to function adequately definition

KEY TERMS

Cultural relativism – the idea that beliefs, customs and attitudes exist only in relation to the particular culture from which they originate and do not necessarily relate to other cultures

Failure to function adequately – a definition that sees abnormality as an inability to cope with day-to-day living

The **failure to function adequately** definition sees individuals as abnormal when their behaviour suggests that they cannot cope with everyday life. Behaviour is considered abnormal when it causes distress leading to an inability to function properly, like disrupting the ability to work and/or conduct satisfying interpersonal relationships. Such people are often characterised by not being able to experience the usual range of emotions or behaviours. The definition focuses on individual suffering, thus drawing attention to the personal experiences associated with mental disorders.

Rosenhan & Seligman (1989) suggest that personal dysfunction has seven features. The more an individual has, the more they are classed as abnormal (see Table 4.1).

Table 4.1 Rosenhan & Seligman's features of personal dysfunction

Features of personal dysfunction	Descriptions of features
Personal distress	A key feature of abnormality. Includes depression and anxiety disorders
Maladaptive behaviour	Behaviour stopping individuals from attaining life goals, both socially and occupationally
Unpredictability	Displaying unexpected behaviours characterised by loss of control, like attempting suicide after failing a test
Irrationality	Displaying behaviour that cannot be explained in a rational way
Observer discomfort	Displaying behaviour causing discomfort to others
Violation of moral standards	Displaying behaviour violating society's moral standards
Unconventionality	Displaying unconventional behaviours

To assess how well individuals cope with everyday life, clinicians use the Global Assessment of Functioning scale (GAF), which rates their level of social, occupational and psychological functioning.

Strengths of the definition

- **Matches sufferers' perceptions** – as most people seeking clinical help believe that they are suffering from psychological problems that interfere with the ability to function properly, it supports the definition.
- **Assesses degree of abnormality** – as the GAF is scored on a continuous scale, it allows clinicians to see the degree to which individuals are abnormal and thus decide who needs psychiatric help.
- **Observable behaviour** – it allows judgement by others of whether individuals are functioning properly, as it focuses on observable behaviours.
- **Checklist** – the definition provides a practical checklist individuals can use to assess their level of abnormality.
- **Personal perspective** – it recognises the personal experience of sufferers and thus allows mental disorders to be regarded from the perception of the individuals suffering them.

Limitations of the definition

- **Abnormality is not always accompanied by dysfunction** – psychopaths, people with dangerous personality disorders, can cause great harm yet still appear normal. Harold Shipman, the English doctor who murdered at least 215 of his patients over a 23-year period, seemed to be a respectable doctor. He was abnormal, but didn't display features of dysfunction.
- **Subjective nature of the features of dysfunction** – although GAF measures levels of functioning, it doesn't consider behaviour from an individual's perspective. What is normal behaviour for an eccentric, like wearing flamboyant clothes, is abnormal for an introvert.
- **Normal abnormality** – there are times in people's lives when it is normal to suffer distress, like when loved ones die. Grieving is psychologically healthy to overcome loss. The definition doesn't consider this.
- **Distress to others** – behaviour may cause distress to other people and be regarded as dysfunctional, while the person in question feels no distress, like Stephen Gough, the naked rambler (see page 146).
- **Personally rewarding abnormality** – an individual's apparently dysfunctional behaviour may actually be rewarding. For example, a person's eating disorder can bring affection and attention from others.
- **Cultural differences** – what is considered 'normal functioning' varies from culture to culture and so abnormal functioning of one culture should not be used to judge people's behaviour from other cultures and subcultures.

Figure 4.2 Harold Shipman

RESEARCH IN FOCUS

A problem with interpreting behaviour from different cultures is that of *imposed etics*. What is an imposed etic and what effect can it have?

For information on research methods, see Chapter 7.

ON THE WEB

Harold Shipman was a psychopath and yet was never seen as abnormal. Read an in-depth review about him at 'Crime library', including a mental profile at: **https://www.youtube.com/watch?v=mT0NLihOK30** and **https://www.thelancet.com/pb-assets/Lancet/extras/04sup_18_webversion.pdf**

Deviation from the ideal mental health definition

This definition perceives abnormality in a similar way to how physical health is assessed, by looking for signs of an absence of well-being, but in terms of mental rather than physical health. Therefore any deviation away from what is seen as normal is classed as abnormal.

KEY TERM

Deviation from ideal mental health – a definition that sees abnormality as a failure to meet the criteria for perfect psychological well-being

The definition needs a set of characteristics of what is required to be normal and these were provided by Marie Jahoda (1958), who devised the concept of ideal mental health. She described six characteristics that individuals should exhibit in order to be normal (see Table 4.2). An absence of any of these characteristics indicates individuals as being abnormal, in other words displaying **deviation from ideal mental health**.

Table 4.2 Jahoda's characteristics of ideal mental health

Characteristics of ideal mental health	Descriptions of characteristics
Positive attitude towards oneself	Having self-respect and a positive self-concept
Self-actualisation	Experiencing personal growth and development. 'Becoming everything one is capable of becoming'
Autonomy	Being independent, self-reliant and able to make personal decisions
Resisting stress	Having effective coping strategies and being able to cope with everyday anxiety-provoking situations
Accurate perception of reality	Perceiving the world in a non-distorted fashion. Having an objective and realistic view of the world
Environmental mastery	Being competent in all aspects of life and able to meet the demands of any situation. Having the flexibility to adapt to changing life circumstances

KEY TERM

Self-actualisation – a state in which people are motivated to achieve their full potential

The more characteristics individuals fail to meet and the further they are away from realising individual characteristics, the more abnormal they are.

Like the deviation from social norms and the failure to function adequately definitions, this definition focuses on behaviours and characteristics seen as desirable, rather than what is undesirable.

Strengths of the definition

- **Positivity** – the definition emphasises positive achievements rather than failures and distress and stresses a positive approach to mental problems by focusing on what is desirable, not undesirable.
- **Targets areas of dysfunction** – the definition allows targeting of which areas to work on when treating abnormality. This could be important when treating different types of disorders, such as focusing upon specific problem areas a person with depression has.
- **Holistic** – the definition considers an individual as a whole person rather than focusing on individual areas of their behaviour.
- **Goal setting** – the definition permits identification of exactly what is needed to achieve normality, allowing creation of personal goals to work towards and achieve, thus facilitating self-growth.

Limitations of the definition

- **Over-demanding criteria** – most people do not meet all the ideals. For example, few people experience personal growth all the time. Therefore, according to this definition, most people are abnormal. Thus the criteria may actually be ideals (how you would like to be) rather than actualities (how you actually are).
- **Subjective criteria** – many of the criteria are vague and difficult to measure. Measuring physical health is more objective, using methods like X-rays and blood tests. Diagnosing mental health is more subjective, relying largely on self-reports of patients who may be mentally ill and not reliable.
- **Changes over time** – perceptions of reality change over time. Once seeing visions was regarded as a sign of a religious experience, but now might be regarded by clinicians as a sign of schizophrenia.
- **Cultural variation** – the criteria used to judge mental health are culturally relative and should not be used to judge others of different cultures. Some types of abnormality exist only in certain cultures, like Koro, which is a syndrome found in South East Asia, China and Africa, where a man believes that his penis is fatally retracting into his body.
- **Non-desirability of autonomy** – collectivist cultures stress communal goals and behaviours and see autonomy as undesirable. Western cultures are more concerned with individual attainment and goals, so the definition is culturally biased.

Figure 4.3 The deviation from ideal mental health definition may be more about the ideal self than the actual self

YOU ARE THE RESEARCHER

Design a questionnaire to measure Jahoda's characteristics of ideal mental health. Include questions that produce both *qualitative* and *quantitative* data. How would you use *content analysis* to make sense of your qualitative data?

For information on research methods, see Chapter 7.

The statistical infrequency definition

The idea here is that behaviours that are statistically rare should be seen as abnormal. Statistics are gathered that claim to measure certain characteristics and behaviours, with a view to showing how they are distributed throughout the general population.

What is regarded as statistically rare depends on normal distribution. A normal distribution curve can be drawn to show what proportions of people share the characteristics or behaviour in question. Most people will be on or near the mean for these characteristics or behaviours with declining amounts of people away from the mean (either above or below it). Any individuals who fall outside 'the normal distribution', usually about 5 per cent of a population (two standard deviation points away from the mean) are perceived as being abnormal. So, for example, individuals whose moods were elevated above or below that of the normal distribution would be classed as abnormal.

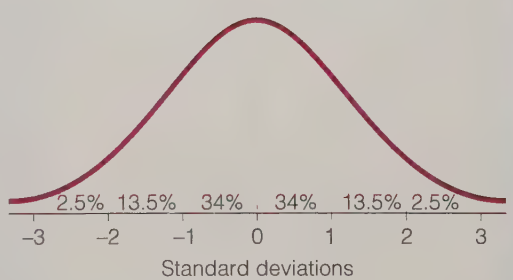


Figure 4.4 Standard deviation

The definition goes no further than declaring which behaviours are abnormal and makes no judgements about quality of life or the nature of mental disorders.

Strengths of the definition

- **Can be appropriate** – in many situations statistical criteria can define abnormality, for example mental retardation.
- **Objective** – once a way of collecting data about a behaviour/characteristic and a 'cut-off point' has been agreed, it becomes an objective way of deciding who is abnormal.
- **No value judgements** – no judgements are made, so, for example, homosexuality, which was defined as a mental disorder under early versions of diagnostic criteria used by psychiatrists, would not be seen under this definition as 'wrong' or 'unacceptable', but merely as less frequent than heterosexuality.
- **Evidence for assistance** – statistical evidence that a person has a mental disorder can be used to justify requests for psychiatric assistance.
- **Based on real data** – the definition relies on real, unbiased data and so again is an objective means of defining abnormality.
- **Overall view** – the definition gives an overview of what behaviours and characteristics are infrequent within a given population.

Limitations of the definition

- **Where to draw the line** – it's not clear how far behaviour should deviate from the norm to be seen as abnormal. Many disorders, like depression, vary greatly between individuals in terms of their severity.
- **Not all infrequent behaviours (those showing statistical infrequency) are abnormal** – some rare behaviours and characteristics are desirable rather than being undesirable. For example, being highly intelligent is statistically rare, but desirable.
- **Not all abnormal behaviours are infrequent** – some statistically frequent 'normal' behaviours are actually abnormal. About 10 per cent of people will be chronically depressed at some point in their lives, which suggests depression is so common as to not be seen as abnormal under this definition.
- **Cultural factors** – the definition doesn't consider cultural factors. What is statistically normal in one culture may not be in another. This can lead to the problem of judging people of one culture by the statistical norms of another culture.

KEY TERM

Statistical infrequency – a definition that sees abnormality as consisting of behaviours that are rare

STRENGTHEN YOUR LEARNING

1. What is cultural relativism? How might it apply to each definition of abnormality?
2. Outline the strengths and limitations of the deviation from social norms definition of abnormality.
3. Describe Rosenhan & Seligman's features of personal dysfunction.
4. Describe Jahoda's characteristics of ideal mental health.
5. Explain the idea of normal distribution in relation to defining abnormality.

ASSESSMENT CHECK

1 David has been feeling rather low lately and his absences from work are threatening his chances of promotion. His sudden outbursts of rage can be quite scary to others and yesterday he turned up at work with his hair dyed purple.

Explain David's behaviour by reference to the failure to function adequately definition of abnormality. **[4 marks]**

2 Discuss one strength and one limitation of the deviation from social norms definition of abnormality. **[2 + 2 marks]**

3 The following statements relate to definitions of abnormality. Copy and complete the table below by inserting the statement, A, B, C, D or E, which describes each definition of abnormality. One description will be left over. **[4 marks]**

A Abnormal behaviours are ones that are very rare.

B Behaviours that are not acceptable to society are abnormal.

C People who can't cope with everyday activities are abnormal.

D Yielding to group pressures is abnormal.

E A lack of autonomy is abnormal.

Definitions of abnormality	Descriptions of abnormality
Deviation from social norms definition	
Deviation from ideal mental health definition	
Failure to function adequately definition	
Statistical infrequency definition	

4 Outline and evaluate definitions of abnormality. **[16 marks]**

5 Discuss the statistical infrequency and deviation from ideal mental health definitions of abnormality. **[12 marks]**

6 To conduct research into definitions of abnormality, psychologists often conduct interviews with participants. Explain one strength and one limitation of conducting such interviews when conducting research into definitions of abnormality. **[2 + 2 marks]**

4.2 Characteristics of phobias, depression and OCD

'The only thing we have to fear is fear itself.'
Franklin D. Roosevelt (1933)

'There's nothing funny about a clown in the moonlight.'
Lon Chaney (1925)

Phobias

KEY TERMS

Characteristics of phobias, depression and OCD – the behavioural, cognitive and emotional symptoms of these mental disorders by which they can be categorised

Phobias – anxiety disorders characterised by extreme irrational fears

Phobias are a type of anxiety disorder. Anxiety is an emotion all people experience and is a natural response to potentially dangerous stimuli, but phobias are characterised by uncontrollable, extreme, irrational and enduring fears and involve anxiety levels that are out of proportion to any actual risk. As many sufferers attempt to deal with their phobias themselves, it is difficult to estimate what the occurrence rate is, but about 10 per cent of people will suffer from a phobia at some point, with females having twice the incidence of phobias as males. Phobias can be very long lasting, enduring over many years.

Most phobias originate in childhood, but lessen in strength during adulthood. Generally people with phobias have insight into their condition, as they realise their fear reactions are irrational, but they cannot consciously control them.

Symptoms

Behavioural

Avoidant/anxiety response – as confrontation with feared objects and situations produces high anxiety responses, efforts are made to avoid the feared objects and situations in order to reduce the chances of such anxiety responses occurring. For instance, if someone has a fear of ghosts they do not take a short-cut home through the graveyard at midnight.

Disruption of functioning – anxiety and avoidance responses are so extreme that they severely interfere with the ability to conduct everyday working and social functioning. For example, a person with a social phobia will find it very hard to socialise with others, or indeed interact meaningfully with them at work.

Emotional

Persistent, excessive fear – phobias produce high levels of anxiety due to the presence of or anticipation of feared objects and situations.

Fear from exposure to phobic stimulus – phobias produce an immediate fear response, even panic attacks, due to the presentation of the phobic object or situation.

Cognitive

Recognition of exaggerated anxiety – generally phobics (people who suffer from phobias) are consciously aware that the anxiety levels they experience in relation to their feared object or situation are overstated.

Sub-types

Phobias are divisible into:

1 simple phobias
2 social phobias
3 agoraphobia.

Simple phobias (also known as *specific phobias*) occur where sufferers have fears of specific things and environments, like astraphobia, the fear of thunderstorms, and coulrophobia, the fear of clowns. Simple phobias are further divisible into:

- animal phobias – for example, arachnophobia (fear of spiders) and mottephobia (fear of moths)
- injury phobias – for example, haematophobia (fear of blood) and scotomaphobia (fear of blindness)
- situational phobias – for example, aerophobia (fear of flying) and gephydrophobia (fear of bridges)
- natural environment phobias – for example, hydrophobia (fear of water) and nephophobia (fear of clouds).

Social phobias are a commonly experienced type of phobia, and involve being over-anxious in social situations, like having to talk in public. Social phobias involve the perception of being judged and feeling inadequate. Social phobics therefore often find conducting meaningful relationships difficult. Social phobias are further divisible into:

- performance phobias – being anxious about performing in public, like playing at a concert or eating in a restaurant with others
- interaction phobias – being anxious about mixing with others, like going on a date or having an interview
- generalised phobias – being anxious about situations where other people are present, like being in a crowd at a football match.

Agoraphobia, the fear of leaving home or a safe place, is another common type of phobia, and often occurs with panic attacks, where sufferers experience panic first and the anxiety generated makes them feel vulnerable about being in open spaces. Agoraphobia can also be brought on by simple phobias such as a fear of contamination or social embarrassment. The natural avoidance response to make in such situations is to find and stay in a safe place, generally at home.

Animal phobias tend to have the earliest onset, followed by other simple phobias, social phobias and then agoraphobia. Phobias can either be learned from experience or genetically transmitted (see The behavioural approach to explaining and treating phobias, page 163).

Figure 4.5 Coulrophobia is a fear of clowns

ON THE WEB

To watch an informative BBC *Explorations* programme (in five parts) on phobias, including types, explanations and treatments, go to YouTube and search for 'Primal Fears BBC Explorations Storyteller Media'.

YOU ARE THE RESEARCHER

Design a questionnaire that determines whether there's a gender difference in the experience of phobias. Ensure your questions measure the intensity of phobias and what types of phobia people experience. Compile a suitable results table and draw relevant conclusions and a graph from it.

For information on research methods, see Chapter 7.

Depression

'Depression comes in bouts. Like boxing. Dad is in the blue corner.'
Joe Dunthorne (2011)

'There are wounds that never show on the body that are deeper and more hurtful than anything that bleeds.'
Laurel K. Hamilton (2006)

KEY TERMS

Depression – a mood disorder characterised by feelings of despondency and hopelessness

Unipolar depression – a form of depression occurring without mania

Bipolar depression – a form of depression characterised by periods of heightened moods and periods of despondency and hopelessness

Depression is an affective mood disorder involving lengthy disturbance of emotions. About 20 per cent of people will suffer from some form of depression, with women twice as vulnerable as men. Females are especially vulnerable to depression in mid to late adolescence, a time when many experience body dissatisfaction, low self-esteem and resistance to achieving. Males may be more vulnerable to depression related to drug abuse due to their greater likelihood to be involved in drug-taking. Depression can occur in cycles, symptoms coming and going over time, with an episode of depression generally lasting between two and six months. There's a high suicide rate among depressives; 10 per cent of severely depressed people commit suicide and 60 per cent of all suicides are related to mood disorders.

Depression can begin any time from adolescence onwards, with average age of onset being in the late twenties, though age of onset has decreased over the past 50 years, as the number of people with the disorder has increased.

At least five symptoms (see later for a full list of symptoms) must be apparent every day for two weeks for depression to be diagnosed by a doctor, with an impairment in general functioning also evident that is not accountable for by other medical conditions or events, for instance mourning a loved one. To be diagnosed with major depression one of the five symptoms must be a constant depressed mood or lessened interest in daily activities. A distinction is made between *major depression* and *dysthymic depression* (chronic depression), the difference being in the duration, type and number of symptoms. Patients meeting the criteria for dysthymic depression have three or more symptoms, instead of the five required for major depression, including depressed mood, but not suicidal thoughts, and show these symptoms for more than two months.

YOU ARE THE RESEARCHER

Design a correlational study to assess the relationship between level of stress and strength of depression. What would be your co-variables? How would you measure level of stress and strength of depression? Compose and justify the use of a suitable directional correlation hypothesis. Identify one confounding variable that could occur in this study.

For information on research methods, see Chapter 7.

Depression is divisible into two main types, **unipolar depression** and **bipolar depression** (also known as manic-depression), but can also be broken down into *endogenous* depression, related to internal biochemical and hormonal factors, and *exogenous* (reactive) depression, related to stressful experiences, though sufferers can have elements of exogenous and endogenous depression combined.

Unipolar depression

Unipolar depression (also known as *major depression*) is a form of depression occurring without mania that differs from bipolar depression by its sufferers only experiencing depression and not the manic episodes sufferers of bipolar depression experience. Up to 25 per cent of women will suffer from unipolar depression and as much as 12 per cent of men, with up to 9 per cent of women and 3 per cent of men suffering from it at any one time. Unipolar depression is characterised by clinical symptoms, usually occurring in cycles. A more severe version is where sufferers also experience delusions; these patients generally experience more social impairment and episodes of depression occur more frequently. Such sufferers don't respond well to antidepressants, but do respond favourably to a combination of antidepressants and antipsychotics.

Symptoms

Behavioural

Loss of energy – depressed people can have reduced amounts of energy, resulting in fatigue, lethargy and high levels of inactivity.

Social impairment – there can be reduced levels of social interaction with friends and relations.

Weight changes – significant decreases or increases in weight are often associated with depression.

Poor personal hygiene – depressed people often have reduced incidence of washing, wearing clean clothes, etc.

Sleep pattern disturbance – depression is often characterised by constant insomnia or oversleeping.

Emotional

Loss of enthusiasm – depression is often characterised by a lessened concern with and/or lack of pleasure in daily activities.

Constant depressed mood – a key characteristic is the ever present and overwhelming feelings of sadness/hopelessness.

Worthlessness – those suffering from depression often have constant feelings of reduced worth and/or inappropriate feelings of guilt.

Cognitive

Delusions – some depressives will experience delusions, generally concerning guilt, punishment, personal inadequacy or disease. Some will also experience hallucinations, which can be auditory, visual, olfactory (smell) or haptic (touch).

Reduced concentration – there can be difficulty in paying/maintaining attention and/or slowed-down thinking and indecisiveness.

Thoughts of death – depressives can have constant thoughts of death and/or suicide.

Poor memory – some depressives will have trouble with retrieval of memories.

Figure 4.6 Bipolar depression involves swinging between bouts of mania and depression

Bipolar depression

Bipolar depression (also known as *manic depression*), is less common than unipolar depression, with about 2 per cent of people suffering from it, equally divided between the sexes. Bipolar depression usually appears in a person's twenties and before the age of 50. Mixed episodes of mania and depression are more common than mania alone.

The onset of depression has been strongly linked with cognitive factors, though biological and other psychological factors are also known to play a part (see The cognitive explanation of depression, page 172).

Symptoms

In addition to the symptoms of unipolar depression, sufferers of bipolar depression also have alternating manic episodes, characterised by the following symptoms.

Behavioural

High energy levels – the condition is characterised by boundless energy resulting in increased work output, increased social interactions/sexual activity.

Reckless behaviour – the condition is also often characterised by dangerous behaviour and risk taking.

Talkative – the condition is generally characterised by fast, endless speech without regard for what others are saying.

Emotional

Elevated mood states – constant 'high' moods are common, with intense feelings of euphoria.

Irritability – sufferers are often frustrated and irritable if they don't get their own way immediately.

Lack of guilt – the condition is characterised by social inhibition and a general lack of guilt concerning behaviour.

Cognitive

Delusions – many ideas sufferers get will be delusional and grandiose; they can also believe others are persecuting them.

Irrational thought processes – the condition is often characterised by reckless and irrational thinking and decision-making.

ON THE WEB

An excellent BBC documentary, *The Truth about Depression*, can be seen on YouTube if you search for 'The Truth about Depression BBC Full Documentary 2013'.

Obsessive–compulsive disorder (OCD)

'I put gloves on before I put gloves on, so I don't get my gloves dirty.'

Jarod Kintz (2007)

KEY TERM

OCD – anxiety disorder characterised by persistent, recurrent, unpleasant thoughts and repetitive, ritualistic behaviours

OCD is an anxiety disorder where sufferers experience persistent and intrusive thoughts occurring as obsessions, compulsions or a combination of both. Generally speaking, obsessions are things people think about and compulsions are what people do as a result of the obsessions. Obsessions comprise forbidden or inappropriate ideas and visual images that aren't based in reality, such as being convinced that germs lurk everywhere, and which lead to feelings of extreme anxiety, while compulsions comprise

intense, uncontrollable urges to repetitively perform tasks and behaviours, like repetitively washing your hands to get rid of germs. The compulsions are an attempt to reduce distress or prevent feared events, even though there's little chance of them doing so. Most sufferers realise their obsessive ideas and compulsions are excessive and inappropriate, but cannot consciously control them, resulting in even higher levels of anxiety. Sufferers can also realise their compulsions are only a temporary solution, but have no other way of coping, so rely on them as a short-term solution. Compulsions can also include avoiding situations that trigger obsessive ideas or images. The symptoms of OCD can overlap with other conditions, such as Tourette's syndrome and autism, which has led some to question whether OCD really exists as a separate disorder.

A sufferer's obsessions and compulsions become very time-consuming, thus interfering with the ability to conduct everyday activities. OCD occurs in about 2 per cent of the population, with no real gender differences in the prevalence of the disorder, though there are gender differences in the types of OCD suffered. Preoccupations with contamination and cleaning are more common in females, while males focus more on religious and sexual obsessions. OCD is more common among male children than females, as males tend to have an earlier, gradual onset with more severe symptoms. Females generally have a later, sudden onset with fewer severe symptoms.

Symptoms: obsessions

Behavioural

Hinder everyday functioning – having obsessive ideas of a forbidden or inappropriate type creates such anxiety that the ability to perform everyday functions is severely hindered – for example, being able to work effectively.

Social impairment – anxiety levels generated are so high as to limit the ability to conduct meaningful interpersonal relationships.

Emotional

Extreme anxiety – persistent inappropriate or forbidden ideas create excessively high levels of anxiety.

Cognitive

Recurrent and persistent thoughts – sufferers experience constantly repeated obsessive thoughts and ideas of an intrusive nature.

Recognised as self-generated – most sufferers understand their obsessional thoughts; impulses and images are self-invented and not inserted externally.

Realisation of inappropriateness – most sufferers understand their obsessive thoughts are inappropriate, but cannot consciously control them.

Attentional bias – perception tends to be focused on anxiety-generating stimuli.

Common obsessions include:

- Contamination, for example by germs
- Fear of losing control, for example through impulses to hurt others
- Perfectionism, for example fear of not being the best
- Religion, for example fear of being immoral.

Symptoms: compulsions

Behavioural

Repetitive – sufferers feel compelled to repeat behaviours as a response to their obsessive thoughts, ideas and images.

Hinder everyday functioning – the performance of repetitive, compulsive behaviours can seriously disrupt the ability to perform everyday functions.

Social impairment – the performance of repetitive, compulsive behaviours can seriously affect the ability to conduct meaningful interpersonal relationships.

Emotional

Distress – the recognition that compulsive behaviours cannot be consciously controlled can lead to strong feelings of distress.

Cognitive

Uncontrollable urges – sufferers experience uncontrollable urges to perform acts they feel will reduce the anxiety caused by obsessive thoughts, such as cleaning door handles to remove the threat of contamination.

Realisation of inappropriateness – sufferers understand their compulsions are inappropriate, but cannot consciously control them.

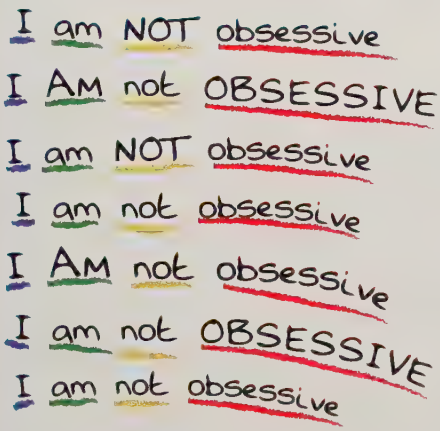

I am NOT obsessive
I AM not OBSESSIVE
I am NOT obsessive
I am not obsessive
I AM not obsessive
I am not OBSESSIVE
I am not obsessive

Figure 4.7 OCD involves repetitive behaviour to reduce the anxiety caused by obsessive thoughts

Common compulsions include:

- Excessive washing and cleaning, for example hair-brushing
- Excessive checking, for example that doors are locked
- Repetition, for example of bodily movements
- Mental compulsions, for example praying in order to prevent harm
- Hoarding, for example of magazines.

Research has suggested a genetic component to the cause of OCD, though other psychological factors are also seen as making a contribution (see The biological approach to explaining and treating OCD, page 184).

STRENGTHEN YOUR LEARNING

1. Describe the behavioural, emotional and cognitive characteristics of phobias, depression and OCD.
2. Explain what is meant by:
   (i) simple phobias
   (ii) social phobias
   (iii) agoraphobia.
3. Explain how unipolar depression differs from bipolar depression.
4. Describe common obsessions and compulsions associated with OCD.

ON THE WEB

A two-part BBC documentary about OCD, *Extreme OCD Camp*, where sufferers confront their disorder, can be found on YouTube if you search for 'Extreme OCD Camp 2013 BBC Three documentary'.

ASSESSMENT CHECK

1 Ever since her house was flooded a few years ago Betty has developed a fear of running water. She always tries to make sure she doesn't go near any rivers or other sources of running water and her phobia causes problems at work and home as she is unable to use the taps to wash or clean her teeth. Betty gets very fearful if she feels there's a risk of being placed in a situation where there will be running water. Betty knows her fear is unreal, but it will not go away.

Making reference to the situation above, identify behavioural, emotional and cognitive characteristics of phobias. **[4 marks]**

2 Briefly describe one behavioural and one cognitive characteristic of OCD. **[2 marks]**

3 Use the numbers next to the following list of characteristics to complete the table below concerning characteristics of phobias and unipolar depression. One characteristic will be left over. **[4 marks]**

1 Loss of energy

2 Compulsions

3 Delusions

4 Avoidant response

5 Recognition of exaggerated anxiety

Type of characteristic	Phobias	Unipolar depression
Behavioural		
Cognitive		

4 Briefly describe the behavioural, cognitive and emotional characteristics of depression and OCD. **[6 marks]**

5 A team of researchers wishes to conduct an observational study to examine the behavioural characteristics of people with OCD. Explain the following. **[2 + 2 marks]**

(i) Why it would be necessary to establish inter-observer reliability in the study

(ii) How inter-observer reliability could be established

The explanation and treatment of mental disorders

KEY TERMS

Behavioural approach – the perception of phobias as occurring through learning processes with treatments based upon modifying maladaptive behaviour through substitution of new responses

Cognitive approach – the perception of depression as determined through maladaptive thought processes with treatments based upon modifying thought patterns to alter behavioural and emotional states

Biological approach – the perception of OCD as determined by physiological means with treatments based upon chemical means

In the following sections we shall consider how various psychological approaches can be used to explain and treat different mental disorders. Those especially focused on will be:

- the **behavioural approach** to phobias
- the **cognitive approach** to depression
- the **biological approach** to OCD.

For each disorder, alternative explanations and treatments will be offered, as these can be a useful source of evaluation. However, care should be taken to use these only to highlight the comparative strengths and weaknesses of the approach under scrutiny. Avoid merely describing an alternative explanation and then evaluating it in terms of research support, practical applications, etc.

IN THE NEWS

Ψ The Psychological Enquirer

Using technology to overcome a fear of spiders

Figure 4.8 The first stage 'cute' spider

Psychiatrist Dr Russell Green is terrified of spiders. A colleague once brought a tarantula's skin into work and he fled the hospital hardly able to breathe. Dr Green's arachnophobia, an exaggerated fear of spiders, is so bad even pictures of spiders scare him. But now Dr Green, along with Dr Fonseca, has created a company called Virtually Free and invented a smartphone app, 'Phobia Free', to help others with a similar phobia. Users first play a series of games with cartoon spiders; initial ones are cute and harmless looking, but gradually become more realistic. In the second stage a 'low-fear' spider appears with scary features removed, before the third stage presentation of a 'low-fear' spider in a real outdoor environment. The fourth stage progresses onto a 'medium-fear' spider (with some scary features) in a real home-setting, before the fifth stage presentation of a 'high-fear' spider (with all its scary features). The last two stages involve an image of a tarantula and then presentation of a spider using augmented reality via the phone's camera. Dr Green believes it would be possible to cure arachnophobia in as little as four hours, but most sufferers would take about two weeks. Different forms of the app could be developed for different phobias; a version that reduces agoraphobia (fear of open spaces) is currently being developed.

The arachnophobia app is based on a behavioural treatment called systematic desensitisation, where phobias are gradually reduced by introducing a sufferer in stages of rising intensity to their phobic object or situation. Sufferers work through a hierarchy of anxiety-producing stimuli, with the central idea being that fear and relaxation can't co-exist, so relaxation strategies are used to remove the fears any stage causes, before moving on to the next stage. Psychologist Elizabeth Gray warns that the app isn't a replacement for real therapy, as part of that process is treatment by a real therapist. For some patients this is the case but others admit having overcome the phobia with the app and on their own.

4.3 The behavioural approach to explaining and treating phobias

Explaining phobias

A wide range of both biological and psychological explanations have been offered as the cause of phobias. Several of these are probably valid, but the focus here will be on **behavioural (or behaviourist) explanations** though other explanations will also be featured as a means of evaluation.

Behaviourist explanations see phobias as being learned through experience via the process of association. In classical conditioning (CC) a stimulus becomes associated with a response, while operant conditioning (OC) involves learning behaviour due to the consequences of that behaviour (see Chapter 3, page 115). There is also social learning theory (SLT), where learning occurs vicariously by observation and imitation of another. CC is associated with behaviour not under conscious control, while OC and SLT are associated with voluntary behaviour.

Via the **two-process model**, CC and SLT are used to explain the acquisition (onset) of phobias and OC is used to explain how phobias are maintained.

The two-process model

1 *The acquisition* (onset) *of phobias* is seen as occurring directly through classical conditioning, for example by the experience of a traumatic event, like being bitten by a dog, or indirectly through social learning, for example through observing or hearing about a fearful event happening to another, like seeing someone else bitten by a dog

2 *The maintenance of phobias* is seen as occurring through operant conditioning, where avoiding or escaping from a feared object/situation acts as a negative reinforcer (the reward being the reduction of anxiety). This reinforces the avoidance response (makes it more likely to occur again).

Classical conditioning

CC is based upon the work of Ivan Pavlov (1903), who explained how dogs learned to salivate in anticipation of being fed rather than when actually being fed (see Chapter 5, page 206). The process by which Pavlov explained this as occurring can be also used to explain the acquisition of phobias, where a natural response that causes fear becomes associated with a neutral stimulus, so that the neutral stimulus by itself causes a fear response. For example, a single pairing of the neutral stimulus of night-time with a frightening experience that produces a natural fear response, such as being mugged, leads to a phobia of the dark.

Operant conditioning

OC involves learning through the consequences (outcomes) of behaviour. A behaviour that is rewarding *reinforces* the chances of the behaviour being repeated in future similar circumstances. An outcome of a behaviour that is pleasant is known as a *positive reinforcement*, while an outcome of a behaviour that results in escaping something unpleasant

KEY TERMS

Behavioural explanation of phobias – a theory that sees phobias as acquired and maintained through environmental learning experiences via the two-process model

Two-process model – the perception of phobias as acquired through classical conditioning and social learning, with their maintenance upheld through operant conditioning

Figure 4.9 Being bitten by a dog can lead to a phobia of dogs through classical conditioning

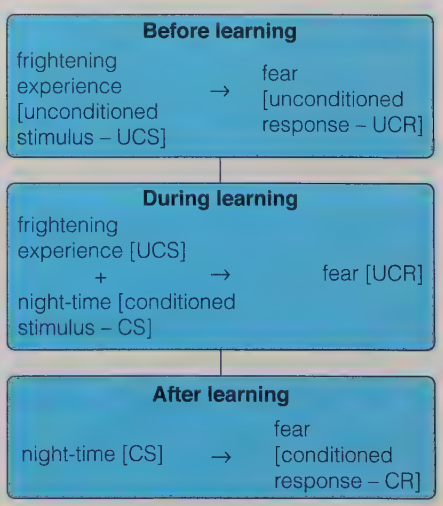


Figure 4.10 The process of acquiring a phobia of the night-time via classical conditioning

is known as a *negative reinforcement*. As detailed by the two-process model, OC explains how phobias are maintained, as when avoidance responses (behaviours that lessen the chances of contact with the feared object or situation) are made the fear response is reduced, reinforcing the avoidance responses, making them more likely to occur again. If a person has a phobia of the dark, because they had a traumatic experience, like being mugged at night-time, then the person might sleep with the lights on, which is *negatively reinforcing*, as it reduces the fear response associated with being in the dark. This reinforces the behaviour, in other words it increases the chances of the person sleeping with the lights on again because anxiety is not experienced. Phobias therefore become very resistant to extinction (dying out), because of the sufferer constantly making reinforcing avoidance responses.

INCREASE YOUR KNOWLEDGE

Along with CC, SLT can also explain the acquisition of phobias. SLT sees behaviour as learned by *modelling* through observation and imitation. Watching someone else experience a traumatic event can cause the observer to subsequently experience the fear response in the presence of the same stimulus. For example, seeing someone else being bitten by a dog could cause the observer to develop a phobia of dogs.

Ost & Hugdahl (1981) reported the case of a boy who witnessed his grandfather vomit while dying and subsequently developed a persistent vomiting phobia, and even contemplated suicide when feeling nauseous, supporting the idea that phobias can be acquired vicariously through social learning.

ON THE WEB

A good site for information on phobias, including a vast list of different types, explanations, treatments, etc., can be found at:

http://phobialist.com/

CLASSIC RESEARCH

The case of 'Little Albert' – John Watson & Rosalie Rayner (1920)

Figure 4.11a A rare photograph of John Watson and Rosalie Raynor during the conditioning of Little Albert

The researchers developed the idea, from real-world observations, that fear could be conditioned into children through the use of loud noises. Their participant was an 11-month-old boy, 'Little Albert', and the study took place at Johns Hopkins University, Baltimore, USA.

Aim

To provide empirical evidence that human emotional responses could be learned through classical conditioning.

Procedure

1 A laboratory experiment was conducted with one participant, an 11-month-old boy who lived in the hospital where his mother was a nurse. Albert was presented with various stimuli, including a white rat, a rabbit and some cotton wool, and his responses were filmed. He showed no fear reaction to any stimuli.

2 A fear reaction was then induced into Albert by striking a steel bar with a hammer behind his head. This startled Albert, making him cry. He was then given a white rat to play with, of which he was not scared. As he reached to touch the rat, the bar and hammer were struck to frighten him. This procedure was repeated three times. Variations of these conditioning techniques continued for 3 months.

3 It was intended that Albert's fear reactions would be 'de-conditioned', but he was removed from the hospital by his mother before this could occur.

Findings

Subsequently, when shown the rat, Albert would cry, roll over and crawl away. He had developed a fear towards the white rat, which he also displayed to similar animals with less intensity and to other white furry objects, like a white fur coat and Santa Claus beard.

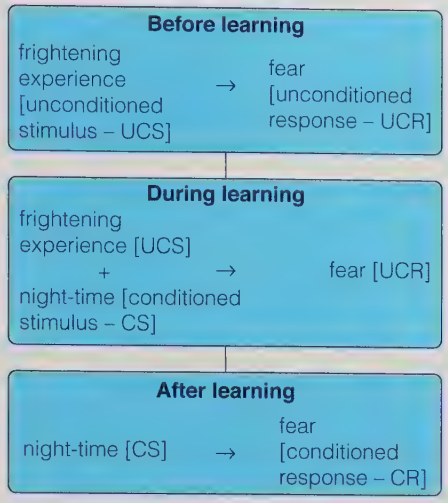


Figure 4.11b Learning a phobia of rats

Conclusions

Conditioned emotional responses, including love, fear and phobias, are acquired as a direct result of environmental experiences, which can transfer and persist, possibly indefinitely, unless removed by counter-conditioning.

Evaluation

The extent of Albert's fear response is disputed. There are mentions in the original paper that Albert's fear reactions were only 'slight'. By today's standards the study was unethical: it was performed without his mother's knowledge or consent and the participant was subjected to unnecessary distress. It would not, therefore, be possible to replicate the study to verify the findings.

(Footnote: It is believed that the real 'Little Albert' died of illness at only 6 years old.)

RESEARCH IN FOCUS

Identify the following in the Watson & Rayner study:

(i) the unconditioned stimulus
(ii) the conditioned stimulus
(iii) the unconditioned response
(iv) the conditioned response.

For information on research methods, see Chapter 7.

Research

Bagby (1922) reported on a case study of a woman who had a phobia of running water that originated from her feet getting stuck in some rocks near a waterfall. As time went by she became increasingly panic-stricken. Although she was eventually de-conditioned, the neutral stimulus of the sound of the running water became associated with the fear she had felt and thus her phobia of running water was acquired.

King *et al.* (1998) reported that case studies showed that children tended to acquire strong phobias through a traumatic experience, which further supports the idea of phobias being acquired through CC.

Di Gallo (1996) reported that around 20 per cent of people experiencing traumatic car accidents developed a phobia of travelling in cars, especially of travelling at speed, which can be explained by CC, whereby the neutral stimulus of a car became associated with the naturally occurring fear response to the crash. They then tended to make avoidance responses involving staying at home rather than making car journeys to see friends, which can be explained by OC, whereby the avoidance response of staying at home was negatively reinforcing and was thus repeated, making the phobia resistant to extinction.

Mowrer (1960) found that by making a few presentations of an electric shock to rats immediately following the sound of a buzzer, he could produce a fear response just by sounding the buzzer. The rats had acquired a phobia of the buzzer through CC. Then through OC he trained the rats to escape the electric shocks by making the avoidance response of jumping over a barrier when the buzzer sounded. As this was negatively reinforcing, the rats repeated the behaviour every time the buzzer sounded, maintaining their fear of the sound of the buzzer.

Figure 4.12 Twenty per cent of people involved in serious traffic accidents will develop a phobia of travelling in cars

Evaluation

Rachman (1984) put forward the *safety signals hypothesis* to explain that avoidance responses made to reduce the chances of exposure to phobic objects/situations are not motivated by a reduction in anxiety as stated by the two-process model, but by positive feelings associated with safe places. He used the example of agoraphobics who will leave their home in the presence of certain people, or travel to work using particular roads, because these people and roads are ones that are trusted and thus represent *safety signals*.

Bounton (2007) argues that the two-process model neglects the influence of *evolution history*, whereby avoidance responses are learned more rapidly if the required response resembles an animal's natural defensive behaviour.

The effectiveness of behaviourist treatments, like systematic desensitisation, in addressing phobic symptoms, lends support to behaviourist explanations of phobias.

The behaviourist viewpoint is weakened by the fact that not everyone experiencing traumatic events, like car accidents, goes on to develop a phobia.

A strength of behaviourist explanations is that they can be combined with biological ones to give a better understanding of phobias. For instance, the idea of *genetic vulnerability* shows how some individuals are more susceptible to developing phobias through environmental experiences.

KEY TERMS

Cognitive explanation of phobias – a theory that perceives phobias as being due to maladaptive thought processes that cause individuals to over-focus upon anxiety-generating features of a stimulus

Evolutionary explanation of phobias – a biological theory that sees phobias as occurring through a process of natural selection due to their adaptive survival value

INCREASE YOUR KNOWLEDGE

Alternative explanations of phobias

Cognitive explanations

Behaviourist explanations focus on maladaptive (faulty) behaviours, but neglect the cognitive processes that occur between a stimulus and a response. Thus **cognitive explanations** focus on the idea that phobics have an *attentional bias* to focus more upon anxiety generating stimuli, for example the teeth of a dog rather than its other features. Phobics are also seen as having maladaptive thoughts and beliefs about stimuli, like believing open taps will lead to flooding, which generalises to a phobia of flowing water.

Figure 4.13 The cognitive explanation sees phobics as having an attentional bias to focus upon anxiety generating stimuli, like the teeth of a dog rather than its other features

Thorpe & Salkovskis (2000) assessed conscious beliefs related to exposure to phobic stimuli, finding a major role in specific phobics for cognitions (thinking) related to harm, suggesting the nature of specific phobias to be cognitive rather than behavioural in origin.

Tomarken *et al.* (1989) showed people with snake phobias slides of snakes and neutral objects and asked how many snakes, trees, etc. there had been. Snake phobics over-estimated the number of snakes compared to a control group, which shows the role distorted thinking plays, an element the behaviourist explanation neglects.

Evaluation of the cognitive explanation

Cognitive explanations may be superior to behaviourist ones as they detail the thought processes underpinning phobias. However, phobias are still dependent in many instances on the role of direct conditioning experiences.

The cognitive viewpoint can explain how a phobia is maintained, but not why it originated in the first place. For example, a phobia could be caused by conditioning (or genetics) and then is perpetuated by faulty thinking.

Evolutionary explanation

The **evolutionary explanation** sees phobias as having an adaptive (survival) value and so they have become commonplace in the population through the process of natural selection.

Garcia & Koelling (1966) found that rats quickly learned not to drink a sweet tasting liquid paired with an injection that made them sick, as it's a natural adaptive response. They did not develop such a taste aversion as quickly when the sweet tasting liquid was paired with an electric shock, as it's not an adaptive response, electric shocks not being apparent in

the environment of evolutionary adaptiveness (EEA). This supports the idea that some phobias are more evolutionary in nature and others more behaviourist.

Cook & Mineka (1989) provided additional support for this idea by demonstrating to laboratory-raised monkeys a wild monkey's fear response to a snake and a rabbit. Subsequently the laboratory-raised monkeys showed a similar fear response to a toy snake, but not a toy rabbit, suggesting an evolutionary readiness to fear snakes, but not rabbits.

Evaluation of the evolutionary explanation

Phobias explain adaptive functions that behaviourist explanations can't, for instance the fear element of phobias can immobilise individuals, aiding concealment from predators, as would a flight response help individuals to outrun predators. Fear responses even cause the release of hormones aiding the clotting of blood, helping heal wounds, as well as stimulating the liver to release glucose to provide energy, important in facilitating flight or fight.

Biological preparedness sees animals having an inherited ability to display certain fears, because they have an adaptive value. Therefore animals develop some conditioned fears more easily, for instance a fear of snakes, as they would have posed a serious threat in the Pleistocene era when most evolution occurred. This shows how the evolutionary and behaviourist explanations can be combined, as phobias have to be learned from environmental experience, with the predisposition to learn the fear being the inherited component.

PSYCHOLOGY IN THE REAL WORLD

Gustafson *et al.* (1976) demonstrated how learning phobias through classical conditioning could be used as a humane method of stopping wolves and coyotes attacking sheep.

Wild wolves and coyotes were fed mutton wrapped in sheepskins dosed with lithium chloride. This made them vomit and the predators quickly learned to associate sheep with the nauseous chemical; instead of attacking sheep, they began to show submissive behaviour towards them, rolling onto their backs to display their stomachs to the sheep.

Figure 4.14 Wolves can be taught using classical conditioning to fear sheep

Treating phobias

If phobias are maladaptive behaviours acquired by learning, it should be possible to replace them with adaptive behaviours acquired through treatments using conditioning techniques based on behaviourist principles.

Systematic desensitisation

Systematic desensitisation (SD) is the main **behaviourist treatment for phobias**. Developed by Wolpe (1958), SD is based on classical conditioning, with patients learning in stages to replace fear responses with feelings of calm, rather than previous associations between phobic objects/situations and fear. The two opposing emotions of anxiety and relaxation are perceived as incapable of co-existing simultaneously (*reciprocal inhibition*). SD uses a progressive, step-by-step approach to feared objects or situations and takes about a month to advance through the entire desensitisation hierarchy.

The hierarchy is constructed before treatment commences, going from least to most feared types of contact with phobic objects/situations, and patients are taught relaxation strategies for each stage of contact. Contact is normally achieved by imagining scenarios (*covert desensitisation*), but sometimes involves actual contact (*in vivo desensitisation*). Snake phobics may begin SD treatment by looking at a picture of snakes in a sealed tank and progressively work through to actually holding one.

KEY TERMS

Behaviourist treatment of phobias – therapies for the removal of phobias based upon the use of conditioning techniques to replace fear responses with feelings of calm

Systematic desensitisation – a behavioural therapy for treating anxiety disorders in which the sufferer learns relaxation techniques and then faces a progressive hierarchy of exposure to the objects and situations that cause anxiety

Figure 4.15 Systematic desensitisation involves a step-by-step approach to a feared object or situation

Flooding

KEY TERM

Flooding – a behavioural therapy used to remove phobias through direct confrontation of a feared object or situation

Another behaviourist therapy is **flooding** (also known as implosion), where instead of a step-by-step approach patients go straight to the top of the hierarchy and imagine, or have direct contact with, their most feared scenarios. The idea is that patients cannot make their usual avoidance responses and anxiety peaks at such high levels that they cannot be maintained and eventually subside.

CONTEMPORARY RESEARCH

The treatment of technophobia by systematic desensitisation – Mark Brosnan & Sue Thorpe (2006)

Technology pervades our occupational, educational and leisure lives and so technophobia, a fear of interacting with technology like computers, has a major negative impact on the life of sufferers. Indeed, technophobia is comparable in severity to more traditional phobias. The researchers investigated whether technophobia is treatable by psychological means.

Figure 4.16 Technophobia is a fear of interacting with modern technology

Aim

To see whether a fear of computers could be successfully treated by systematic desensitisation.

Procedure

In the first study, a sample of 16 participants was used: 8 computer-anxious participants and a control group of 8 non-anxious participants. A 10-week systematic desensitisation programme was delivered to the computer-anxious participants.

In the second study, 30 computer-anxious participants were assigned to a treatment group or a non-treatment group. There was also a non-anxious control group of 59 participants.

Findings

In the first study, computer anxiety and coping strategies were significantly improved in the computer-anxious group, becoming comparable to the non-anxious controls.

In the second study, testing established over the period of an academic year that the reduction in anxiety was three times greater in the treated group than the non-treated group. By the end of the year the treated group no longer differed from the control group, while the non-treated group remained significantly more anxious.

Conclusions

The behavioural therapy of systematic desensitisation is effective in reducing technophobia.

Evaluation

It is not known whether the therapy had a long-term benefit in reducing technophobia of computers, nor whether it is effective against other forms of technophobia. The success of the therapy suggests a major benefit in allowing technophobes to participate in an increasingly technologically-orientated world.

RESEARCH IN FOCUS

Previous research suggests SD is effective in treating phobias. Compose a suitable one-tailed (directional) hypothesis for Brosnan & Thorpe's study into the treatment of technophobia. What would the null hypothesis be?

For information on research methods, see Chapter 7.

Research

Jones (1924) used SD to eradicate 'Little Peter's' phobia of white fluffy animals and objects, for example rabbits and cotton wool. The rabbit was presented to the patient at closer distances each time his anxiety levels subsided to permit movement onto the next stage and Peter was rewarded with food to

develop a positive association towards the rabbit. Eventually he developed affection for the rabbit, which generalised onto similar animals and objects.

Rothbaum *et al.* (1998) reported on virtual reality exposure therapy where patients are active participants within a computer generated three-dimensional world that changes naturally with head movements. The advantage of this over normal SD and implosion is that treatment occurs without ever leaving the therapist's office, more control is gained over phobic stimuli and there's less exposure of patients to harm and embarrassment.

Wolpe (1960) used flooding to remove a girl's phobia of being in cars. The girl was forced into a car and driven around for four hours until her hysteria was eradicated, demonstrating the effectiveness of the treatment.

Ost (1997) found that flooding is a rapid treatment that often delivers rapid, immediate improvements, especially when a patient is encouraged to continue self-directed exposure to feared objects and situations outside of therapy sessions.

Barlow (2002) reports that flooding has been shown to be equally as effective in treating phobias as SD, but SD is preferred, as it is better tolerated by most patients.

Solter (2007) reported on the case study of a 5-month-old baby who showed signs of traumatic stress after a three-day hospital stay for surgery to correct the shape of his head. Flooding was used, whereby the child was allowed to have a full-blown emotional response during several treatment sessions. The outcome was positive, with the disappearance of some symptoms of traumatic stress disorder after the first week, and no remaining symptoms after two months. Follow-up evaluations for one year revealed normal development with no return of symptoms. This suggests flooding is an effective therapy and can be used with very young children.

Figure 4.17 Wolpe removed a girl's fear of cars by flooding – direct confrontation with the feared object

Evaluation

SD is mainly suitable for patients who are able to learn and use relaxation strategies and who have imaginations vivid enough to conjure up images of feared objects/situations.

Although patients can gradually confront phobias in an imaginary sense, there's no guarantee this will work with actual objects/situations, suggesting in vivo treatment to be superior to covert desensitisation.

Behaviourist treatments work best in treating simple phobias, but are less effective with agoraphobia and social phobias, which suggests these types of phobias may not be best explained through behaviourist means.

There are ethical considerations with both SD and flooding, as they can both be psychologically harmful, though cost–benefit analyses may regard long-term benefits of eradicating the phobia as outweighing the short-term costs of distress.

Flooding is not suitable for patients who are not in good physical health, as the extreme anxiety levels caused by confrontation with feared objects/situations, although short-lived, can be very stressful on the body, incurring risks of heart attacks, etc.

INCREASE YOUR KNOWLEDGE

Other treatments

Drug therapies

Although phobias tend to be treated mainly by psychological means, **drug therapies** that reduce symptoms of anxiety have proven useful. Anxiolytic drugs, such as the Benzodiazepines (BZs) like Valium and Librium, work by increasing the effect of the neurotransmitter GABA. Phobias are also treated with anti-depressants: selective serotonin re-uptake indicators (SSRIs) elevate serotonin levels, while monoamine oxidase inhibitors (MAIOs) increase serotonin and noradrenaline levels.

Slaap *et al.* (1996) treated 30 social phobics with the anti-depressant SSRIs, finding 72 per cent of patients had reduced heart rate and blood pressure, suggesting drug therapies are effective in lowering the physical symptoms of the disorder in the short term.

Den Boer *et al.* (1994) reported considerable evidence indicating MAOI inhibitors, like moclobemide, to be effective in reducing social anxiety and social avoidance phobias.

Evaluation of drug therapies

A disadvantage of drugs compared to behaviourist treatments is their potential side-effects; BZs can cause drowsiness and addiction, MAOI inhibitors have an increased risk of hypertension with their usage, while SSRIs can lead to stomach and sleep pattern disturbance and loss of sexual ability.

Drug therapies are more cost-effective than behaviourist therapies and don't require the presence of a therapist, but as well as the risk of side-effects, they do not address the cause of anxiety – once the drugs are withdrawn anxiety levels will increase again.

Cognitive behavioural therapy (CBT)

The aim of **CBT** is to help patients identify irrational and maladaptive thinking patterns and change them to rational, adaptive ones. Thinking is seen as underpinning feelings and behaviour, so by modifying modes of thought, feelings and behaviour should also change for the better.

Spence *et al.* (2000) assessed the value of CBT in treating 50 children with social phobias aged between 7 and 14 years. Child-focused CBT and CBT plus parental involvement were found to be effective in reducing social and general anxiety levels and these improvements were retained at a one-year follow-up, suggesting CBT has a long-term effectiveness with phobic children, and illustrating its effectiveness in comparison to behaviourist therapies.

Kvale *et al.* (2004) conducted a meta-analysis of 38 treatment studies for people with dental phobias, finding CBT resulted in 77 per cent of patients regularly visiting a dentist four years after treatment, again showing the treatment's long-term effectiveness in comparison to behavioural therapies.

Evaluation of CBT

CBT is the most frequently used treatment for phobias, testament to its effectiveness in comparison to behaviourist and other therapies.

Behaviourist therapies merely address the observable symptoms of phobias, while CBT targets the maladaptive thinking that underpins phobias, making them a more effective treatment than behaviourist ones, though both treatments have the advantage of not incurring side-effects, like drug therapy does.

One specific form of CBT used with phobics is cognitive-behavioural group therapy (CBGT), where other group members offer support as a hierarchy of fears is worked through, using relaxation strategies at each step. This of course has similarities with the behavioural therapy of SD, but with the additional cognitive element of replacing irrational beliefs that generate anxiety, with rational ones.

KEY TERMS

Drug therapies for phobias – treatment of phobias through the use of chemical medications

Cognitive behavioural therapy (CBT) for phobias – a treatment that seeks to replace the irrational thought processes underpinning phobias with more rational ones

STRENGTHEN YOUR LEARNING

1. How can classical and operant conditioning be combined to explain the acquisition and maintenance of phobias?
2. Outline the procedure and findings of Watson & Rayner's study of 'Little Albert'.
3. How do alternative explanations account for phobias?
4. Explain the difference between SD and flooding in treating phobias.
5. Explain how Bosnan & Thorpe used SD to treat technophobia. To what extent were they successful?
6. Outline other treatments for phobias. How successful are they compared to behavioural treatments?

ASSESSMENT CHECK

1 Seumas was walking home after a night out in town when a man suddenly grabbed him and swung a punch at him. Ever since then Seumas has been scared of the dark and cannot get to sleep unless the light is on. He now refuses to go out at night-time and prefers to stay at home. Use classical conditioning to explain how Seumas has developed a phobia of the dark. **[3 marks]**

2 Outline how relaxation and the hierarchy components of systematic desensitisation are used to treat phobias. **[4 marks]**

3 Place a 'C' next to the two descriptions below that relate to classical conditioning and an 'O' next to the two descriptions that relate to operant conditioning. One description will be left over. **[4 marks]**

Description	Type of conditioning
Involves observation and imitation	
Involves a stimulus becoming associated with a response	
Involves learning through the consequences of a behaviour	
Involves the use of reinforcements	
Explains the acquisition of phobias	

4 Outline and evaluate systematic desensitisation as a treatment for phobias. **[16 marks]**

5 Discuss the behavioural approach to explaining phobias. **[12 marks]**

6 The table below shows degree of anxiety scores for snake phobics when confronted by a snake. From the data shown calculate the following: **[3 marks]**

(i) the mean

(ii) the median

(iii) the mode.

Participant	Degree of anxiety score
1.	9
2.	7
3.	6
4.	7
5.	4
6.	7
7.	6
8.	5
9.	8
10.	3
11.	4

Table showing degree of anxiety score (out of 10) for snake phobics when confronted by a snake

4.4 The cognitive approach to explaining and treating depression

Explaining depression

A wide range of both biological and psychological explanations have been offered as the cause of depression, with each having a degree of evidence to support it, but the focus here will be on the cognitive approach, though other explanations will also be featured as a means of evaluation.

The cognitive approach generally explains depression in terms of faulty and irrational thought processes and perceptions. Where behaviourist explanations would focus on maladaptive (faulty) behaviours, the **cognitive explanation** focuses on the maladaptive cognitions that underpin such maladaptive behaviours.

KEY TERMS

Cognitive explanation of depression – a theory that perceives depression as determined through maladaptive thought processes

Beck's negative triad – a model of the cognitive biases which are characteristic features of depression. The triad consists of three elements, or pessimistic thought patterns, about the self, the world and the future

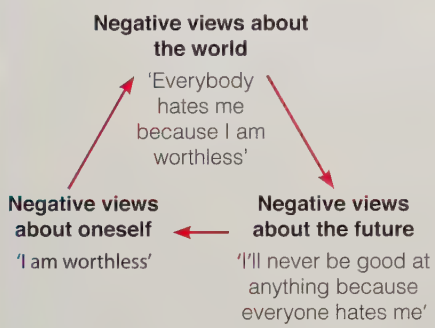

Negative views about the world
'Everybody hates me because I am worthless'
Negative views about oneself
'I am worthless'
Negative views about the future
'I'll never be good at anything because everyone hates me'

Figure 4.18 Beck's negative triad

Beck's negative triad

Beck (1987) believes people become depressed because the world is seen negatively through *negative schemas* (negative viewpoints of oneself based on bad experiences – see below), which dominate thinking and are triggered whenever individuals are in situations that are similar to those in which negative schemas were learned. Beck perceived negative schemas as developing in childhood and adolescence, when authority figures, such as parents, place unreal demands on individuals and are highly critical of them. These negative schemas then continue into adulthood, providing a negative framework to view life in a pessimistic fashion.

These negative schemas fuel and are fuelled by cognitive biases (irrational ways of thinking), causing individuals to misperceive reality.

Negative schemas

- **Ineptness schemas** – make depressives expect to fail
- **Self-blame schemas** – makes depressives feel responsible for all misfortunes
- **Negative self-evaluation schemas** – constantly remind depressives of their worthlessness.

Cognitive biases

- **Arbitrary inference** – conclusions drawn in the absence of sufficient evidence. For example, a man concluding he's worthless because it's raining the day he hosts an outdoor party
- **Selective abstraction** – conclusions drawn from just one part of a situation. For example, a worker feeling worthless when a product doesn't work, even though several people made it
- **Overgeneralisation** – sweeping conclusions drawn on the basis of a single event. For example, a student regarding poor performance on one test as proof of his worthlessness
- **Magnification and minimisation** – exaggerations in evaluation of performance. For example, a man believing he's ruined his car due to a small scratch (maximisation) or a woman believing herself worthless despite many praises (minimisation)

Negative schemas, together with cognitive biases/distortions, maintain the *negative triad (three negative forms of thinking)*, which sees negative thoughts as being about:

1 **The self** – where individuals see themselves as being helpless, worthless, and inadequate, i.e. 'nobody loves me'
2 **The world** – where obstacles are perceived within one's environment that cannot be dealt with, i.e. 'everything is beyond my control'
3 **The future** – where personal worthlessness is seen as blocking any improvements, i.e. 'I will always be useless'.

Ellis' ABC model

Ellis believed that depressives mistakenly blame external events for their unhappiness. He thought, however, that it is their interpretation of these events that is to blame for their distress. To explain this process, Ellis developed what he referred to as the **ABC model**:

A – Activating event: Something happens in the environment around you; for example your teacher tells you that she's unhappy with your work.

B – Beliefs: You hold a belief about the event or situation; for example you see yourself as a failure.

C – Consequence: You have an emotional response to your belief; for example a feeling of worthlessness.

The activating event triggers an emotion that is seen as true and the consequence is that the individual becomes depressed because they have a negative view about themself and no confidence in their ability.

Other people who do not tend towards depression may react completely differently. For instance, when being told the boss is unhappy with their work, the belief may be that they did their best with the consequent emotion of being motivated to do better. The difference between depressed and non-depressed people, therefore, is how they perceive themselves.

Cognitive behavioural therapies, such as rational emotive behaviour therapy (REBT) (see page 177), were formed from Ellis' ABC model and the model can be evaluated by reference to research studies of the effectiveness of such therapies.

KEY TERM

Ellis' ABC model – an explanation that sees depression occurring through three components of an activating agent, a belief and a consequence

INCREASE YOUR KNOWLEDGE

Abramson *et al.* (1978) proposed another cognitive explanation by revising learned helplessness in terms of **depressed attributional style**, based on three dimensions:

- **internal/external locus** – whether cause of an event concerns the individual or not
- **stable/unstable** – whether the cause is a permanent feature or temporary
- **global/specific** – whether the cause relates to the whole person or just one feature.

This explanation is based on the way individuals *attribute* reasons to events that occur in their lives. Those who see themselves as having little control over their lives tend to attribute reasons as due to negative occurrences and perceive such failures as due to an internal locus of control ('It's my fault and I'm responsible'), global features of their personality ('that's how I am with everything in my life') and stable features ('that's how I will always be'). Such individuals have low self-esteem and lack motivation and so are vulnerable to developing depression.

Seligman (1979) created the *attributional style questionnaire (ASQ)* comprising a series of hypothetical situations for which individuals identify the cause. Depressives tend to demonstrate an attributional style whereby positive events are perceived as caused by other people and negative events by themselves.

KEY TERM

Depressed attributional style – a cognitive explanation of depression that sees depression as originating from individuals perceiving that negative events occur due to their personal failings

- Seligman (1979) reported that students making global, stable attributions remained depressed for longer after examinations, supporting the cognitive explanation of attributional style.
- Peterson & Seligman (1984) found that people identified by the *attributional style questionnaire* as being vulnerable to depression explained negative life events as being due to internal, global, stable factors and were more likely to develop depression when experiencing stressors, demonstrating support for the concept of depressed attributional style.

CONTEMPORARY RESEARCH

Depression symptoms and cognitive control of emotion cues: A functional magnetic resonance imaging study – Beevers, Clasen, Stice & Schnyer (2010)

Previous research has indicated, in line with Beck's negative triad, that patients with depression tend to respond more to negative stimuli than to neutral or positive ones. However, in this novel study the researchers used fMRI scanning to assess possible links between depressive symptoms and alterations in brain areas associated with cognitive control, with a view to seeing if this could be used as a means to predict those at risk of developing more severe forms of depression.

Aims

- To assess whether brain areas associated with cognitive control are affected by emotional stimuli in individuals with mild depressive symptoms.
- To assess whether ventral lateral pre-frontal cortex function is altered in individuals with mild to moderate depressive symptoms during cognitive control of stimuli.
- To see whether neural mechanisms can show the degree of vulnerability to developing severer forms of depression.

Procedure

Figure 4.19 Happy and sad facial types used in the study

1 27 females aged 18–27 years responded to advertisements to form a self-selected sample.
2 Depression in all participants was measured with the well-established Centre for Epidemiologic Studies Depression scale (CESD) with 13 participants being placed in a low depression symptoms group (LDG) and 14 in a high depression symptoms group (HDG].
3 The mean CESD score for the HDG group was indicative of mild to moderate symptoms of depression.
4 Cue stimuli consisted of three facial types, happy, sad and neutral, along with a control condition of geometric shape cues.
5 432 trials were conducted where a single facial or geometric shape cue was presented on a screen along with one of two target stimuli (either * or ** on the screen in the same location as the shape cue). Participants pressed a button to indicate which target stimuli was presented and the time measured to do this was recorded.
6 Participants simultaneously had their brains scanned with an fRMI scanner.

Findings

Different brain activation was recorded between the LDG and the HDG during presentation of happy or sad faces, in brain areas requiring cognitive control over emotional stimuli (ventral lateral pre-frontal cortex function). There was no difference in brain activation with neutral facial and geometric shape cues.

Conclusions

Individuals with mild to moderate levels of depression have difficulty in activating brain areas associated with cognitive control of emotional information.

Depressive symptoms are associated with impaired engagement of lateral pre-frontal cortex (PFC) and parietal brain regions during cognitive control of emotional information.

Poor cognitive control of emotional information may indicate levels of vulnerability to more severe forms of depression.

Evaluation

The findings do not generalise to males, as only females were tested. The age range of participants was also relatively narrow and so results do not generalise to children or older adults.

Participants' menstrual cycles were not assessed and so it is not known if hormonal fluctuations associated with menstrual cycle activity may have affected the findings.

The CESD scale for measuring depression is regarded as highly reliable and valid, giving added support to the findings.

Longitudinal research would be needed to assess if deficits in cognitive control of emotional information are a cause or consequence of mild to moderate depressive symptoms and whether such symptoms do predict the onset of severer forms of depression.

If the findings are true, then improving cognitive control may help prevent the onset of more severe forms of depression.

Research

McIntosh & Fischer (2000) tested the negative cognitive triad to see if it contains the three proposed distinct types of negative thought. They found no clear separation of negative thoughts, but instead a single, one-dimensional negative perception of the self, suggesting retention of all three areas of the triad as separate dimensions is unnecessary for representing the structure of depressive cognition.

Boury *et al.* (2001) monitored students' negative thoughts with the Beck depression inventory (BDI), finding that depressives misinterpret facts and experiences in a negative fashion and feel hopeless about the future, giving support to Beck's cognitive explanation.

Saisto *et al.* (2001) studied expectant mothers, finding that those who didn't adjust personal goals to match specific demands of the transition to motherhood, but indulged instead in negative thinking patterns, had increased depressive symptoms, supporting Beck's cognitive theory.

Koster *et al.* (2005) presented participants with either a positive, negative or neutral word on a screen, after which a square appeared and participants pressed a button to say which area of the screen the square appeared in. Depressed participants took longer to disengage from the negative words than non-depressed participants, which suggests the depressives were focusing more on the negative words in line with Beck's theory.

Evaluation

- There is lots of research evidence supporting the idea of cognitive vulnerability being linked to the onset of depression, with depressives selectively attending to negative stimuli.
- The cognitive explanation of depression is based upon scientific principles that permit objective testing, allowing improvement of the model and thus greater understanding of the disorder.
- A high degree of success has been achieved in treating depression with cognitive therapies in comparison to therapies based on other explanations, thus providing support for such explanations. Most evidence linking negative thinking to depression is correlational and doesn't indicate negative thoughts causing depression. Beck came to believe it was a *bi-directional relationship*, where depressed individuals' thoughts cause depression and vice versa.
- A big strength of the theory is that it acknowledges that other aspects, such as genes, development and early experiences, can lead to certain thinking patterns which then lead to depression.
- The cognitive approach has had less success in explaining and treating the manic component of bipolar depression, lessening support for the model as a global explanation of depression.
- Some critics believe that not all depressed people have a distorted view of their own abilities and that while they may focus on negative elements of events they do actually understand such events accurately and therefore don't show the negative biases that Beck believes they should.

ON THE WEB

For a comprehensive account of depression, its different types and therapies, go to:

https://www.mentalhealth.org.uk/a-to-z/d/depression

RESEARCH IN FOCUS

Most evidence linking negative thinking to depression is correlational.

1 Why would such evidence not show causality?
2 Would the relationship be a positive or a negative one?
3 What kind of graph is used to plot correlational data?

For information on research methods, see Chapter 7.

Alternative explanations of depression

Genetic explanation

The genetic explanation centres on the idea that vulnerability to depression is inherited. The explanation is generally researched through twin and adoption studies, though more recently gene-mapping studies have been used that compare genetic material from those with high and low incidences of the disorder.

Research

Wender *et al.* (1986) found that adopted children who develop depression were more likely to have a depressive biological parent than a depressed adoptive parent, even though adopted children are raised in different environments, implying biological factors are more important than cognitive ones.

Plomin *et al.* (2013) used gene-mapping techniques with a sample of 3,154 pairs of 12-year-old twins, to find that genetics accounted for about 66 per cent of the heritability of cognitive abilities. This suggests that the cognitive features of depression, such as negative schemas, may have a large genetic component to them, which illustrates how the genetic and cognitive explanations can be combined together to give a better understanding of the origin of the disorder.

Evaluation

The similarity of symptoms across gender, age and cultural groups, plus the similarity in physical symptoms, suggests a genetic rather than a cognitive influence, though of course the cognitive features of depression may be genetically mediated, which again suggests the two explanations can be combined rather than seen as separate.

If the genetic explanation was solely true, then concordance rates between MZ (identical) twins would be 100 per cent and all depressives would share genetic material, which they don't. So although research does indicate a genetic influence, other influences, such as cognitive factors, must also play a role.

Behavioural explanation

The behavioural explanation sees depression as a learned condition. Lewinsohn (1974) proposed that negative life events may incur a decline in positive reinforcements and even lead to learned helplessness, where individuals learn through experience that they seemingly can't bring about positive life outcomes. Depression could even result from social learning, through the observation and imitation of depressed others.

Research

Maier & Seligman (1976) found that participants placed in a situation where escape from noise or shocks was impossible didn't try to escape from future similar situations where escape was possible, lending support to the concept of learned helplessness.

Coleman (1986) found that individuals receiving low rates of positive reinforcement for social behaviours became increasingly passive and non-responsive, leading to depressive moods, which provided support for Lewinsohn's learning theory.

Evaluation

- Overall, there is little research evidence that solidly backs up behaviourist explanations, while the cognitive approach is supported by a body of research based evidence, which strongly suggests the cognitive explanation to be superior.
- Kanter *et al.* (2008) state that behaviourism cannot offer an account of depression that addresses its complexity satisfactorily. Cognitive explanations are more able to do this, as they can account for the irrational thought processes that are seen as underpinning the condition.

Treating depression

Cognitive behavioural therapy (CBT)

CBT is the main psychological treatment used to help treat depression and is based on the cognitive model, which sees abnormal behaviour as caused by disordered thought processes. The idea behind CBT is that beliefs, expectations and cognitive assessments of self, the environment and the nature of personal problems affect how individuals perceive themselves and others, how problems are approached and how successful individuals are in coping and reaching goals. Therefore CBT assists patients to identify irrational and maladaptive thoughts and alter them. As behaviour is seen as being generated by thinking, the most logical and effective way of changing maladaptive behaviour is to change the maladaptive thinking underlying it. Thoughts are perceived as affecting emotions and behaviour and so are modified to reduce depressive symptoms.

CBT is an umbrella term for a number of different therapies, the two best known being *rational emotive behaviour therapy* (REBT) and *treatment of negative automatic thoughts* (TNAT). The central idea of both is to challenge and restructure maladaptive ways of thinking into adaptive, rational ones.

KEY TERMS

Cognitive treatments of depression – therapies that seek to reduce depression by replacing maladaptive thought processes with more adaptive ones that foster a more positive sense of self

Cognitive behavioural therapy (CBT) for depression – a treatment that seeks to replace the irrational thought processes underpinning depression with more rational ones

Rational emotive behaviour therapy (REBT) – a form of CBT for depression that seeks to replace negative self-statements with more positive ones

Rational emotive behaviour therapy (REBT)

Rational emotive behaviour therapy (REBT) was developed by Albert Ellis and modified over a number of years until his death in 2007. According to Ellis, *people are not disturbed by things but rather by their view of things* and so he believed the way people feel is largely influenced by how they think.

Ellis saw irrational thoughts as causing emotional distress and behaviour disorders. Irrational thoughts cause negative self-statements and so REBT

involves making patients' irrational and negative thoughts more rational and positive. Ellis identified eleven basic irrational *musturbatory beliefs* that are emotionally damaging and can lead to psychological problems. These include: 'I must be loved by everybody . . . otherwise everyone hates me' and 'I must be excellent in all respects . . . otherwise I am worthless'. The therapist's aim is to challenge patients' thinking and show how irrational their thoughts are. Patients are told to practise positive and optimistic thinking. A central part of the therapy involves using the ABC model as a technique to record irrational beliefs.

A = Activating event: patients record events leading to disordered thinking, such as exam failure.

B = Beliefs: patients record negative thoughts associated with the event, such as 'I'm useless and stupid.'

C = Consequence: patients record negative thoughts or behaviours that follow, such as feeling upset and thinking about leaving college.

Figure 4.20 The ABC model

Figure 4.21 REBT involves trying to see things more optimistically

REBT involves *reframing*, in other words challenging negative thoughts by reinterpreting the ABC in a more positive, logical way. For example, the exam was difficult, or there was not enough time for revision. Basically, REBT involves looking on the bright side and seeing things more optimistically.

Treatment generally involves one or two sessions of therapy every two weeks for about fifteen sessions. Therapists and patients work together to verify reality. If a patient makes the negative statement 'I'm a poor parent, because my children misbehave', the therapist gets the patient to assess its truth and examine the idea that someone's a bad parent because children are sometimes naughty. Patients therefore become more realistic, more able to distinguish fact from fiction and don't perceive things in extreme terms.

After the *education phase*, where individuals learn relationships between thoughts, emotions and behaviour, *behavioural activation* and *pleasant event scheduling* are introduced, aimed at increasing physiological activity and participation in social and other rewarding activities, for instance socialising with others. Cognitive factors are then addressed after patients have experienced improvement in mood or energy, by being taught to identify faulty thinking responsible for low mood and to challenge these thoughts.

Between sessions patients are given goals to boost self-esteem. These involve *hypothesis testing* of negative thoughts through behavioural coping skills, for instance testing the belief that they're incapable of being included in conversations, by talking to strangers in social situations. Therapists only set tasks they're confident patients can succeed at; failure reinforces the ineptness patients believe in. To prevent relapse, a few 'booster' sessions are given in the subsequent year.

CONTEMPORARY RESEARCH

The effectiveness of cognitive behavioural therapy in depression – Sandra Embling (2002)

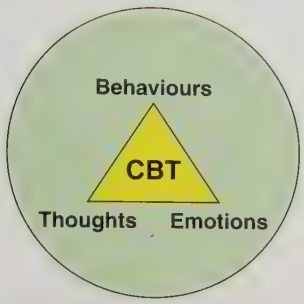


Figure 4.22 How effective is CBT in treating depression?

The effectiveness of CBT has been scrutinised in many studies, but most compared CBT against other treatments and, while showing that CBT works, they don't provide insight into who benefits most. In an age where available resources are being financially restricted it is important that resources are targeted at those who would benefit most from them.

Aims

- To assess which types of depressive patients benefit most and least from CBT.
- To explore the relationship between emotions and depression to assess which patients benefit most from CBT.

Procedure

1 An opportunity sample of 38 patients, aged between 19 and 65 years and suffering from depression as diagnosed by ICD-10 criteria, were the participants.
2 A waiting list group of 19 patients receiving antidepressant medication formed the control group, who were seen once a week by a trained clinician for between 10 and 20 minutes to review symptoms and side-effects and provide advice. Both treatment and control group patients continued to receive drug therapy during the study.
3 Participants in the treatment group received 12 sessions of CBT from trained therapists, each session lasting between 60 and 90 minutes. They received 2 sessions per week for 4 weeks, followed by 1 session a week for 4 weeks.
4 Patients recorded dysfunctional thought records (DTRs) to monitor and record mood changes. Using a 1–100 scale patients rated the negative emotions of anger, anxiety and sadness. As DTRs are an important part of CBT they weren't used with the control group.
5 The Beck depression inventory version 2 (BDI-II) was used to assess level of depression in all patients, pre-study and at one-week intervals throughout the study.

Findings

1 The treatment group's mean BDI-II scores decreased over the course of the treatment. The control group's mean scores remained the same.
2 The treatment group expressed more negative emotions at the end of the study than the beginning, which is part of CBT's success. Expressing negative emotions is necessary for recovery to occur.
3 Those who did not improve with CBT had high levels of *sociotropy* (the need to be liked by others, please others and to seek the approval of others) and *perfectionism*, low levels of *autonomy* and *high external locus of control* (see Chapter 1, page 35).

Conclusions

Depressed patients are less likely to readily express negative emotions.

CBT combined with drug therapy is more effective than drug therapy alone.

Personality characteristics are associated with suppressing emotions and affect CBT outcomes. People with perfectionist traits, high in sociotropy and with high external locus of control and low levels of autonomy have poorer outcomes from CBT, while people with self-orientated perfectionism, with high levels of autonomy, an internal locus of control and low levels of sociotropy benefit most from CBT.

Evaluation

A lack of expressed emotions may be a causal factor of depression or an effect of being depressed.

The improvement in condition of the treatment group may be due to them being seen more frequently and for longer than the control group.

Depressed patients should be psychologically measured to assess their suitability for CBT as it may not be appropriate for everyone.

RESEARCH IN FOCUS

Embling's study into CBT used an opportunity sample.

1 How would this sample be gathered?

2 Give one strength and one limitation of an opportunity sample.

For information on research methods, see Chapter 7.

Research

Lincoln *et al.* (1997) used a questionnaire to identify stroke victims who had developed clinical depression. Nineteen patients were then given CBT sessions for four months, resulting in reduced symptoms, suggesting CBT to be a suitable treatment for specific groups of depressives.

The Department of Health (2001) reviewed research papers of treatments for depression, including behavioural, cognitive, humanistic and psychotherapeutic ones, finding CBT the most effective, but didn't endorse the use of CBT alone, as other treatments, like behavioural therapy, were effective too.

Whitfield & Williams (2003) found CBT had the strongest research base for effectiveness, but recognised there's a problem in the National Health Service being able to deliver weekly face-to-face sessions for patients and suggested this could be addressed by introducing self-help versions of the treatment, like the SPIRIT course, which teaches core cognitive behavioural skills using structured self-help material.

Hollon *et al.* (2006) found that 40 per cent of moderately to severely depressed patients treated with CBT for sixteen weeks relapsed within the following twelve months, compared to a relapse rate of 45 per cent for patients treated for the same period with drug therapy and 80 per cent for patients treated with a placebo (given a pill containing no medication). This suggests that CBT is slightly more effective, long term, than drug therapy and much better than no treatment at all.

David *et al.* (2008) found, using 170 patients suffering from major depressive disorder, that patients treated with fourteen weeks of REBT had better treatment outcomes than those treated with the drug fluoxetine six months after treatment. This suggests that REBT is a better long-term treatment than drug therapy.

Evaluation

CBT is the most effective psychological treatment for moderate and severe depression and one of the most effective treatments where depression is the main problem. It is also very effective in stopping mild depression from developing into severe depression. It also has few side-effects.

The better trained the therapist, the better the therapeutic outcomes, which illustrates how the use of trained therapists is essential to the treatment's effectiveness.

The application of CBT occurs over relatively short time periods compared to other treatments and is more cost effective than such treatments. CBT also has long-term benefits, as the techniques involved are used continually to stop symptoms returning.

One problem with CBT is whether the theory behind it is correct. Is a depressed person's disordered thinking a cause or an effect of depression? Many cognitive behavioural therapists believe the relationship works both ways.

There are ethical concerns with CBT as it can be too therapist centred. Therapists may abuse their power of control over patients, forcing them into certain ways of thinking and patients can become too dependent on therapists.

CBT is difficult to evaluate. Senra & Polaino (1998) found that the use of different measurement scales to assess CBT produced different measures of improvement among patients.

For patients with difficulty concentrating, often problematic with depressives, CBT can be unsuitable, leading to feelings of being overwhelmed and disappointed, which strengthens depressive symptoms rather than reducing them.

CBT, as with all 'talking therapies', isn't suitable for patients who have difficulties talking about inner feelings, or for those without the verbal skills to do so.

KEY TERMS

Drug therapies for depression – treatment of depression through the use of chemical medications

Electro-convulsive therapy (ECT) – treatment of depression through electrical stimulation of the brain in order to facilitate biochemical changes

INCREASE YOUR KNOWLEDGE

Other treatments

Drugs

While CBT addresses maladaptive thought processes, antidepressants have a physical effect on the brain by increasing serotonin production. There are three types of antidepressants used to treat depression: *monoamine oxidase inhibitors* (MAOIs), *tricyclics* and *selective serotonin re-uptake inhibitors* (SSRIs).

There's no best drug, as patients respond differently to different drugs and drug choice is also affected by symptoms displayed and side-effects exhibited.

Hirschfield (1999) reported tricyclics are effective in the treatment of mild and severe depression and are the first choice of treatment in the latter. Sixty to sixty-five per cent of patients taking tricyclics experience improvement in symptoms, which compares favourably to CBT, but relapse rates are relatively higher after treatment ceases.

DeRubeis *et al.* (1999) compared antidepressants and CBT in four clinical trials for the treatment of severe depression, finding a small advantage for CBT, which suggests CBT is a more appropriate treatment for severe forms of depression.

Cuijpers *et al.* (2008) performed a meta-analysis of trials that compared more modern versions of SSRIs against CBT and found a small but significant difference in favour of SSRIs. While this indicates that the effectiveness of **drug therapies** has improved to a more favourable level than with CBT, drug therapies still have much higher relapse rates than CBT, making overall effectiveness more difficult to calculate, especially when the lower cost of drug therapies is also considered.

Evaluation of drug treatment

Comparison of the relevant effectiveness of drugs and CBT isn't easy to assess, as there are different forms of antidepressants and CBT, which have different success rates with different types of depression. As well as the effectiveness of the treatments, the relapse rates for both forms of treatment must also be considered, though CBT is generally seen as superior here. Then there is the question of cost-effectiveness; drugs don't require a therapist to administer them (which CBT does) and are generally a cheaper treatment, but are they more cost-effective when relapse rates are considered?

An advantage of CBT is that it brings improvement in condition very quickly, while drugs take time to act, usually kicking in after ten to fourteen days, making it difficult to persuade patients to keep taking them, and medication must continue after improvements in mood are achieved or relapse may occur. Drugs also have to be withdrawn slowly: sudden cessation causes restlessness, insomnia, anxiety and nausea and they have side-effects, which CBT doesn't, such as possible cerebral haemorrhage with MAOIs, possible cardiovascular effects with tricyclics (and death from overdose) and risk of suicide with Prozac.

ECT

ECT (electroconvulsive treatment) involves electrically stimulating the brain through electrodes on the head and is believed to produce changes in neurotransmitter levels including sensitivity to serotonin and an increase in GABA, noradrenaline and dopamine levels. It is generally used when other treatments have failed.

Figure 4.23 ECT involves electrical stimulation of the brain

Fenton *et al.* (2006) gave six patients twelve weeks of CBT after a course of ECT treatment and found five out of six had further symptom reductions. This suggests CBT may prolong improvements produced by ECT, illustrating how the two treatments can be effectively combined.

Shelton & Hollon (2012) report that ECT is highly effective, with 60 per cent of patients resistant to other forms of treatment showing significant improvements in the short term. However, 84 per cent relapse within six months. This suggests that overall ECT is less effective than CBT, but for these patients CBT may already have proved of little worth.

Evaluation of ECT

Although ECT may only have a relatively short-lived positive effect, it does give an opportunity for other proven therapies, such as CBT, to then be applied. The reduction in symptoms produced by ECT may allow CBT to now be effective when before symptoms were too severe for this to occur.

Although ECT may seem brutal and can produce side-effects, such as memory loss, it does save lives, as patients given ECT have generally failed to respond to other treatments like CBT and are often suicidal.

STRENGTHEN YOUR LEARNING

1 What are:
   (i) negative schemas
   (ii) cognitive biases?
2 Describe the three components of the negative triad.
3 Outline the procedure and conclusions of Beevers *et al.*'s study into depression.
4 How well are the genetic and behavioural explanations able to account for depression in comparison to the cognitive explanation?
5 How is CBT thought to work?
6 How is Ellis' ABC model included into REBT?
7 Outline the aims and conclusions of Embling's study into CBT and depression.
8 How do drug therapies and ECT attempt to treat depression? In comparison to CBT how effective are they?

ASSESSMENT CHECK

1 Oonagh has been feeling emotionally low for some time now. She feels that nobody really likes her and that she has no positive qualities to offer, nor does she feel that things will improve, as she will always be useless.

Explain in terms of Beck's negative triad why Oonagh may be suffering from depression. **[3 marks]**

2 Outline how cognitive behavioural therapy is used to treat depression. **[4 marks]**

3 Use the numbers next to the following statements to complete the table below concerning Beck's negative triad. One statement will be left over. **[3 marks]**

1 Individuals see themselves as having little worth.

2 Individuals see things as beyond their control.

3 Individuals see personal defects as preventing them from improving.

4 Individuals see others as thinking differently to them.

Component of Beck's negative triad	Statement number
The self	
The future	
The world	

4 Outline and evaluate the cognitive approach to explaining depression. **[16 marks]**

5 Discuss cognitive behaviour therapy as a means of treating depression. **[12 marks]**

6 Explain two ethical issues that should be taken into account when conducting research into patients with depression. **[4 marks]**

IN THE NEWS

Ψ The Psychological Enquirer

'Obsessed with control' – a battle with OCD

Figure 4.24 Melissa Blinstock's OCD was so bad that before starting work she had to close her eyes and touch the tip of each pencil five times

Melissa Binstock's troubles began aged 8 when the unpredictable movements of her Tourette's syndrome left Melissa feeling not in control of her life. So control became her obsession; first it was her belongings at school, books and pencils, perfectly sharpened of course, had to be arranged in order. Before starting work she had to close her eyes and touch the tip of each pencil five times. Her desire was for a safe, predictable world which she felt her rituals could provide; without them she was consumed with overwhelming anxiety. However, control over the external world then progressed onto controlling herself. So her rituals now included wearing the same T-shirt every day, it gave her a sense of power and stability. Then she moved on to what she ate; 12 grams a day of fat, 12 grams of sugar per item, only eating at one restaurant. By the time she went to high school, rituals controlled every moment of her life: the way she dressed, undressed, only eating white foods. At university Melissa spiralled out of control, the constant battle between the comfort of her rituals and a great desire to be 'normal' became too much and she collapsed from lack of food; she'd been surrounded by people all day and her rule was that she could only eat in private. Her saving moment came when, during a lecture about CBT, Melissa realised it might be possible for her to change her thoughts and feelings. Through practice exposure and response prevention (ERP), she forced herself repetitively into anxiety-provoking activities until they no longer produced feelings of fear. Eventually, Melissa, aged 22, was free of her obsessions and compulsions and the anxiety that came with them.

Melissa was suffering from obsessive–compulsive disorder (OCD), an anxiety disorder characterised by persistent unpleasant thoughts and repetitive behaviours. Sufferers generally realise their thoughts and behaviour are inappropriate, but can't control them. Like Melissa, sufferers often have symptoms of Tourette's syndrome too. Research has brought a greater understanding of the condition, allowing effective therapies, like that received by Melissa, to be developed.

4.5 The biological approach to explaining and treating OCD

The biological approach is also known as the medical model and sees abnormal conditions as being similar to physical illnesses caused by abnormal biological processes. Two possible **biological explanations** are firstly hereditary influences through genetic transmission and secondly the occurrence of OCD through damage to neural (brain) mechanisms.

Genetic explanations

The **genetic explanation** centres on OCD being inherited through genetic transmission, with research originally centring on twin and family studies to assess whether this viewpoint is valid and, if so, to what extent genes do

KEY TERMS

Biological explanation of OCD – a theory that sees OCD as determined by physiological means, such as genetics, neurochemical imbalances or brain abnormalities

Genetic explanation of OCD – the perception of OCD as transmitted through inherited factors

play a part. However, as in other areas of psychology, the problem with twin studies is separating out the relative influences of genes and environment.

With the introduction of DNA profiling, more recent attention has been upon gene-mapping studies, which involve comparing genetic material from OCD sufferers and non-sufferers. Such studies also permit researchers to see whether OCD truly is a separate disorder, as OCD sufferers often also have Tourette's syndrome. Results from both forms of study indicate a genetic link to OCD, with particular genes being involved that make some individuals more vulnerable to developing the disorder than others.

It is unlikely that single genes cause OCD; more likely is that it is a combination of genes that determine an individual's level of vulnerability to the condition. Although there seems to be some genetic similarity between OCD and Tourette's syndrome, current thinking is that they are two separate disorders. One interesting finding is the possibility that the genetic contribution to the disorder varies among different age groups. Future research in this area needs to be done to identify whether there are varying rates of genetic influence upon different sub-types of OCD.

Figure 4.25 Gene-mapping studies allow researchers to test the genetic explanation

CONTEMPORARY RESEARCH

Twin studies on obsessive–compulsive disorder: A review – Grootheest, Cath, Beekman & Boomsma (2005)

Figure 4.26 Can twin studies help us to see if OCD is inherited through our genes?

Twin studies of OCD began in 1929 and varying degrees of genetic influence have been suggested. In this meta-analysis the researchers assessed 70 years of twin studies into OCD. In a twin study MZ (identical) twins are compared against DZ (non-identical) twins. If the chances of both twins in an MZ pair having OCD is greater than that of both twins in a DZ pair having the disorder, it suggests a genetic component, as MZ twins are 100 per cent genetically similar, while DZ twins are only 50 per cent genetically similar. Case studies of single pairs of twins were also included in the review.

Aims

- To see if there is any indication of the extent to which OCD is inherited.
- To see if there is any difference in the extent to which OCD is inherited between children and adults.

Procedure

1 Twin studies of two broad types were reviewed:
   - 'Old literature' – comprising studies performed between 1929 and 1965, where it is not known if patients would be diagnosed with the disorder under modern diagnostic criteria.
   - 'Studies meeting modern criteria' – comprising studies where patients were diagnosed under DSM criteria.

2 In all 10,034 twin pairs included in 28 twin studies formed the review. There were 9 studies from 1929 to 1965 comprising 37 twin pairs, and 19 modern-era studies comprising 9,997 twin pairs.

Findings

1 From studies where methodology and statistical analysis were deemed sufficiently objective to gain useful data, it was estimated that in children, obsessive–compulsive symptoms are heritable, with genetic influences ranging from 45 to 65 per cent.

2 From studies where methodology and statistical analysis were deemed sufficiently objective, it was estimated that in adults, obsessive–compulsive symptoms are heritable, with genetic influences ranging from 27 to 47 per cent.

Conclusions

Twin studies indicate a genetic component to the transmission of OCD.

Heritability of OCD appears to be greater in children than among adults.

Evaluation

The majority of twin studies of OCD were not performed in large enough numbers or under methodological conditions sufficient to gather objective data therefore there is a need for further properly controlled twin studies to investigate the heritability of OCD.

There is a need to assess whether the different sub-types of OCD have different levels of genetic transmission.

There is a need to include, along with MZ–DZ twin comparisons, data from more gene-mapping studies, which look for similarities in genetic material in the DNA of sufferers and non-sufferers.

YOU ARE THE RESEARCHER

Design a twin study to assess the heritability of OCD. What kind of experimental design would you be using? What would be the independent variable (IV)? The dependent variable (DV)? Identify one important confounding variable.

Your study should produce a heritability estimate. What does this mean?

What other research methods could be used to check your results?

For information on research methods, see Chapter 7.

Research

Lenane *et al.* (1990) performed a study into the prevalence of OCD among related family members, finding evidence for the existence of heritable contributions to the onset of the disorder, lending support to the genetic viewpoint.

Samuels *et al.* (2007) used gene mapping to compare OCD sufferers who exhibited compulsive hoarding behaviour with those who didn't, finding a link to chromosome 14 marker D14S588, implying a genetic influence to compulsive hoarding behaviour, which may also indicate the existence of separate OCD sub-type.

Davis *et al.* (2013) used a study method called genome-wide complex trait analysis, which allows simultaneous comparison of genetic variation across the entire genome, rather than the usual method of testing genes one at a time. The genetic datasets of 1,500 participants with OCD were compared against 5,500 non OCD-controls (the study also compared the datasets of 1,500 Tourette's syndrome sufferers with 5,200 non-Tourette's controls). The results showed that both OCD and Tourette's syndrome had a genetic basis, though more so in Tourette's syndrome, and that although there were some shared genetic characteristics, the two disorders had distinct genetic architectures. This suggests the two are separate disorders, though with some overlap.

Figure 4.27 Dogs can have OCD as well as humans and so are used in research into the disorder

Tang *et al.* (2014) decided that as complex genetics hinder attempts to understand their role in OCD in humans, they would perform research using dogs. Dogs suffer from naturally occurring compulsive disorders that closely model human OCD, but the limited diversity within dog breeds makes identifying genetic influences easier. Gene analysis showed that OCD-affected dogs had significantly higher levels of particular gene variants than dogs without the condition, which suggests a genetic link to OCD. The extent to which findings can be generalised to humans is debatable.

Evaluation

Although research suggests a genetic component to OCD, there must be some environmental influences upon the disorder, or else the concordance rate between MZ twins would be 100 per cent.

There does not appear to be a single gene involved in the transmission of OCD; instead what research suggests is that many genes scattered throughout the genome each contribute a small amount to an

individual's overall risk of developing the disorder. Whether an individual does go on to develop the disorder is then dependent on the degree of environmental triggers that an individual encounters.

- Pato *et al.* (2001) report that a substantial amount of evidence suggests that OCD is a heritable condition, but that few details are understood about actual genetic mechanisms underpinning the disorder, indicating the need for more focused research.
- As evidence indicates genetic factors are at work in the expression of some forms of OCD, especially obsessions about contamination, aggression and religion, and compulsions involving washing, ordering and arranging, it may well be that some types of OCD are more genetic in nature than others.
- As studies like Grootheest *et al.* (2005) find, OCD originating in childhood is more genetic in nature than that originating in adulthood, suggesting there may be different types of OCD with different causes.
- The fact that family members often display dissimilar OCD symptoms, for example a child arranging dolls and an adult constantly washing dishes, weakens support for the genetic viewpoint, as if the disorder was inherited then surely exhibited behaviours would be the same?

Neural explanations

Some forms of OCD have been linked to breakdowns in immune system functioning, such as through contracting streptococcal (throat) infections, Lyme's disease and influenza, which would indicate a biological explanation through damage to neural mechanisms. Such onset of the disorder is more often seen in children than adults.

PET (positron emission tomography) scans also show relatively low levels of serotonin activity in the brains of OCD patients and as drugs that increase serotonin activity have been found to reduce the symptoms of OCD, it suggests that the neurotransmitter may be involved with the disorder.

PET scans also show that OCD sufferers can have relatively high levels of activity in the orbital frontal cortex, a brain area associated with higher-level thought processes and the conversion of sensory information into thoughts. The brain area is thought to help initiate activity upon receiving impulses to act and then to stop the activity when the impulse lessens. A non-sufferer may have an impulse to wash dirt from their hands; once this is done the impulse to perform the activity stops and thus so does the behaviour. It may be that those with OCD have difficulty in switching off or ignoring impulses, so that they turn into obsessions, resulting in compulsive behaviour.

Figure 4.28 Lyme's disease, caused by tick bites, is associated with OCD through damage to neural mechanisms

KEY TERM

Neural explanation of OCD – the perception of OCD as resulting from abnormally functioning brain mechanisms

Research

Pichichero (2009) reported that case studies from the US National Institute of Health showed that children with streptococcal (throat) infections often displayed sudden indications of OCD symptoms shortly after becoming infected. Such children also often exhibited symptoms of Tourette's syndrome. This supports the idea that such infections may be having an effect on neural mechanisms underpinning OCD.

Fallon & Nields (1994) reported that 40 per cent of people contracting Lyme's disease (a bacterial infection spread by ticks) incur neural damage resulting in psychiatric conditions including OCD. This suggests that the **neural explanation** can account for the onset of some cases of OCD.

Zohar *et al.* (1987) gave mCPP, a drug that reduces serotonin levels, to twelve OCD patients and twenty non-OCD control participants, finding that symptoms of OCD were significantly enhanced in the OCD patients. This suggests that the sufferers' condition was related to abnormal levels of serotonin.

Hu (2006) compared serotonin activity in 169 OCD sufferers and 253 non-sufferers, finding serotonin levels to be lower in the OCD patients, which supports the idea of low levels of serotonin being associated with the onset of the disorder.

Saxena & Rauch (2000) reviewed studies of OCD that used PET, fMRI and MRI neuro-imaging techniques to find consistent evidence of an association between the orbital frontal cortex brain area and OCD symptoms. This suggests that specific neural mechanisms are involved with the disorder.

ON THE WEB

A useful site for comprehensive information about OCD, including its causes and treatments, can be found at:

www.mind.org.uk/information-support/types-of-mental-health-problems/obsessive-compulsive-disorder-ocd/#.VLArLU2zWP8

KEY TERMS

Evolutionary explanation of OCD – a biological theory that sees OCD as occurring through a process of natural selection due to the disorder's adaptive survival value

Cognitive explanation of OCD – a theory that sees OCD as caused by maladaptive thought processes that cause individuals to focus on anxiety-generating stimuli and behaviours that reduce such anxieties

Evaluation

- It is thought that infections which reduce immune system functioning don't actually cause OCD, but may instead trigger symptoms in those more genetically vulnerable to the disorder. The onset of the disorder generally occurs very quickly after infection, usually within one to two weeks.
- To what extent abnormal levels of serotonin and activity within the frontal orbital cortex are actual causes of OCD or merely effects of the disorder has not been established.
- There may well be a genetic connection to neural mechanisms, through such mechanisms (for example, levels of serotonin activity) being regulated by genetic factors. An NIMH (National Institute for Mental Health) study examined DNA samples from sufferers and found OCD to be associated with two mutations of the human serotonin transporter gene (hSERT), which led to diminished levels of serotonin.
- Despite the fact that research indicates there are neural differences between OCD sufferers and non-sufferers, it is still not known how these differences relate to the precise mechanisms of OCD.
- Not all sufferers of OCD respond positively to serotonin enhancing drugs, which lessens support for abnormal levels of the neurotransmitter being the sole cause of the disorder.

INCREASE YOUR KNOWLEDGE

Alternative explanations of OCD

Evolutionary explanation

The **evolutionary explanation** sees OCD as being beneficial by having an adaptive survival value. OCD involves repetitive behaviours like washing and grooming and these would have been useful against infection. Other similar behaviours may have increased vigilance and alertness, again incurring a survival value. Therefore behaviours like continually cleaning door handles may merely be exaggerations of prehistoric adaptations.

Research

Chepko-Sade *et al.* (1989) found rhesus monkeys who performed the most grooming of others were retained within a group following group in-fighting, suggesting that OCD tendencies have an adaptive value, as continued group membership is crucial to survival.

Abed & Pauw (1998) believe OCD is an exaggerated form of an evolved ability to foresee situations and predict the outcome of one's own thoughts and behaviour, so that dangerous scenarios can be coped with before they happen, suggesting that OCD helps in the avoidance of harm.

Figure 4.29 Compulsive behaviours, like repetitive hair brushing, may be an exaggeration of evolutionary acquired behaviours that incur a survival value

Evaluation of the evolutionary explanation

The explanation is a biological one that can be seen as an extension to the genetic explanation rather than an opposing explanation, as genes are the medium by which evolution occurs. There's a common-sense value to OCD having occurred through the process of evolution and thus having a genetic basis, leading to neuro-anatomical and biochemical influences.

Behavioural features of OCD, like precision and hoarding, would be beneficial in hunting and foraging and therefore useful in the EEA (see page 167) and remain now due to genome lag, where genes take time to evolve and fit current environments.

The cognitive explanation

The **cognitive explanation** sees OCD sufferers as having faulty, persistent thought processes that focus upon anxiety-generating stimuli, such as assessing the risk of infection from an environment as much higher than it is in reality. Behaviours that lessen impaired obsessive thoughts become compulsions because of their anxiety-reducing qualities.

Research

Rachman & Hodges (1987) report that some individuals are more susceptible to obsessional thinking because of increased vulnerability due to genetic factors, which links cognitive factors to the genetic explanation.

Gehrig *et al.* (2000) found that the irrational thought processes of nine OCD patients were associated with activity within the orbital frontal cortex that was not seen in non-OCD control patients. This illustrates how the neural and cognitive models can be combined to explain the occurrence of OCD.

Evaluation of the cognitive explanation

OCD sufferers have impaired thought processes that could be due to them having impaired neural functions, which allows the cognitive explanation to be put into a biological framework by being seen as linked to the neural explanation rather than being a separate explanation.

The fact that there are different sub-types of OCD, each focusing upon different forms of anxiety arousal and impaired thought processes (for example emotional contamination, where people fear that by associating with people with negative emotions they will become like them, or sexual identity, where sufferers fear being of an opposite sexual orientation), supports the idea of OCD being largely determined by cognitive rather than biological factors.

The biological approach to treating OCD

Biological treatments are based on the idea of correcting the biological abnormalities seen as causing OCD. Drugs are the most common form of biological therapy, though psychosurgery (see below) is also occasionally used as a treatment.

Drug therapies

Antidepressants are used to treat OCD, such as SSRIs, which elevate levels of serotonin and cause the orbital frontal cortex to function at more normal levels. The most common SSRI used with adults is fluoxetine (Prozac). For children aged 6 years, sertraline is usually prescribed and fluvoxamine for children aged 8 years and older. Treatment usually lasts for between twelve and sixteen weeks. Anxiolytic drugs are also used due to their anxiety lowering properties. Antipsychotic drugs that have a dopamine lowering effect have also proven useful in treating OCD, though they are only generally given after treatment with SSRIs hasn't proved effective (or incurs serious side-effects).

KEY TERMS

Biological treatments of OCD – therapies that seek to address OCD by correcting the physiological abnormalities seen as causing the disorder

Drug therapies for OCD – the treatment of OCD through chemical means

CONTEMPORARY RESEARCH

Olanzapine augmentation for treatment-resistant obsessive–compulsive disorder – Koran, Ringold & Elliott (2000)

Figure 4.30 Antidepressants are the most common drug used to treat OCD

Research had shown that combining the antipsychotic drug risperidone with a serotonin re-uptake inhibitor (SRI) benefits patients with forms of OCD that don't respond to treatment. So the researchers here decided to assess the ability of another atypical antipsychotic, olanzapine, to do the same, as it has a similar effect on serotonin and dopamine levels.

Aims

To assess the ability of olanzapine augmented with an SRI to alleviate treatment resistant forms of OCD.

Procedure

1 10 adult OCD patients, whose condition had not responded to treatment of at least 60 mg a day for 10 weeks of the SRI drug fluoxetine, consented to act as participants.
2 All participants had OCD for at least one year, as diagnosed by the Yale-Brown obsessive compulsive scale (Y-BOCS) and had not been diagnosed with any other disorder.
3 Participants had failed a mean of 3.3 SRI trials and had a mean Y-BOCS score of 29.0
4 Administration of fluoxetine continued, but 2.5 mg a day of olanzapine was added to the treatment for two weeks. The olanzapine was then increased to 5 mg a day and two weeks later to 10 mgs a day for four more weeks.

Findings

1 9 participants completed the trial.
2 Mean Y-BOCS scores were 24.4 (–4.6, a 16 per cent reduction).
3 One patient's Y-BOCS score dropped by 68 per cent, another by 30 per cent and a third by 29 per cent.
4 Only one patient was rated as 'much improved', but this improvement was maintained over the next 6 months taking 5 mg daily of olanzapine.
5 6 patients experienced the side-effect of significant weight increase.

Conclusions

Augmenting SRI treatment with olanzapine has some positive effect with treatment of resistant forms of OCD.

The administration of simultaneous drug therapies can be more effective than single drug treatments.

Evaluation

Results would need to be confirmed by double-blind, placebo controlled trials to be confirmed (see page 290). There is also a need to compare the effectiveness of risperidone and olanzapine when added to SRI treatments to see which is superior.

A negative of the trial is that 60 per cent of participants put on considerable weight, which may lead to psychological harm. A cost–benefit analysis here would need to consider the extent of the improvement in patients' condition, weighed against the degree of harm caused through side-effects.

The response of patients to a biological treatment supports the idea of a biological cause to OCD, though the treatment aetiology fallacy warns that just because a disorder responds to a treatment doesn't necessarily mean the treatment is addressing the cause.

PSYCHOLOGY IN THE REAL WORLD

Research suggests that drugs are an effective therapy, but critics accuse the drugs companies of suppressing evidence that drugs often aren't effective and indeed are dangerous. They pay clinicians to promote their products and have an unhealthy influence over politicians who control mental health services. Sales of antipsychotic drugs globally topped £10 billion in 2008 and new generation drugs cost on average £75 compared to £17 for older versions, yet evidence suggests they are no more effective. Dr David Healey (2013), a leading expert, reports that by 2003 six million Europeans were taking antidepressants semi-permanently while the number of prescriptions for them increases at about 10 per cent a year. Prozac is linked by Bergquist *et al.* (1999) to suicidal urges in some people and Healey estimates that up to 2,500 extra suicides a year in Europe are triggered by antidepressants, with other serious side-effects including 6,000 birth defects and 30,000 miscarriages from taking antidepressants in pregnancy (about 1 in 10 pregnant women are prescribed antidepressants). The accusation remains that profit is being put before people's health.

Research

Pigott & Seay (1999) reviewed studies testing the effectiveness of drug therapies, finding SSRIs to be consistently effective in reducing OCD symptoms. While the tricyclic antidepressant drug clomipramine proved slightly more effective, it had more serious side-effects. This suggests that SSRIs should be given as a first attempt drug treatment and clomipramine should only be used when SSRIs have not proven effective.

Ciccerone *et al.* (2000) investigated the effect of low doses of the antipsychotic drug risperidone in treating OCD, finding treatment effective due to the drug's dopamine lowering effect.

Julien (2007) reported that studies of SSRIs show that although symptoms do not fully disappear between 50 and 80 per cent of OCD patients improve, allowing them to live a fairly normal lifestyle, which they wouldn't be able to do without the treatment.

Soomro *et al.* (2008) reviewed seventeen studies of SSRIs versus placebo treatments involving 3,097 patients and found SSRIs to be moderately effective in the short term in treating OCD of varying duration in adults, lending a degree of support to the treatment.

Evaluation

Generally drugs don't 'cure' OCD, but reduce obsessive thoughts and compulsive behaviour to such a level that a more normal lifestyle can be achieved.

A limitation of drug therapy is the side-effects that patients may experience. Loss of sexual appetite/ability is common, as is irritability, sleep pattern disturbance (insomnia/drowsiness), headaches and loss of appetite.

Antidepressant medication may be more suitable for adults, as they are more able to tolerate and understand side-effects.

It's not sure if drug treatments effective in treating OCD reduce obsessive symptoms, or instead lessen the depressive symptoms that often accompany the condition.

Drug treatments are widely used to treat the symptoms of OCD as they are relatively cheap, don't require a therapist to administer them and are a user-friendly form of treatment, as people are used to taking medicines for illnesses.

Some would argue that because of the risk of side-effects and the tendency of antidepressants to produce heightened levels of suicidal thinking, plus the effectiveness of psychological treatments, drug treatments shouldn't be used to treat OCD.

PSYCHOLOGY IN THE REAL WORLD

Mainly we have been considering the effectiveness of single treatments for mental disorders by comparing their success rates with each other, yet a more interesting approach is that of *eclectic treatments*, where different treatments are combined together for greater effectiveness. For depression a combination of drugs and psychotherapy is effective, especially when antidepressants are given during the acute phase of depression and then psychotherapy to prevent relapse.

OCD and phobias are both anxiety disorders and treating them with drugs can incur a high relapse rate, while CBT often isn't tolerated due to the high anxiety levels it causes, but a combination of the two cancels out each other's weaknesses: drugs ease anxiety levels and CBT decreases relapse rates. So even though two treatments are more costly than one, it may be cost-effective if it results in long-term improvements in condition, rather than having to repeatedly treat a recurring condition.

YOU ARE THE RESEARCHER

Design an experiment to test the effectiveness of antidepressant drugs against placebo treatment. What experimental design would be used? What would be your independent variable (IV) and dependent variable (DV)? How would you establish a double-blind procedure?

For information on research methods, see Chapter 7.

Other treatments

Psychosurgery

Psychosurgery involves destroying brain tissue to disrupt the cortico-striatal circuit by the use of radio-frequency waves. This has an effect on the orbital frontal cortex, the thalamus and the caudate nucleus brain areas, and is associated with a reduction in symptoms. There's been a recent movement towards using deep-brain stimulation, which involves the use of magnetic pulses on the supplementary motor area of the brain, which is associated with blocking out irrelevant thoughts and obsessions.

Figure 4.31 Psychosurgery involves irreversible destruction of brain tissue to treat OCD

Research

Richter *et al.* (2004) reported that 30 per cent of OCD patients had a 35 per cent or greater reduction in symptoms, but there were occasional complications, such as urinary incontinence and seizures. As these were patients at risk of suicide who hadn't responded to drug therapies, the treatment can be considered relatively effective.

Mallett *et al.* (2008) evaluated deep-brain stimulation as a therapy for treatment resistant OCD, comparing it with sham (pretend) stimulation and found significant symptom reduction, which suggests the treatment to be effective.

Evaluation

- Although psychosurgery has a relatively small success rate and can cause serious side-effects, it can be seen as an acceptable treatment, as it's only used on severe forms of OCD that have not responded to other treatments, such as drug therapies, for about ten years and where there is severely diminished quality of life and/or risk of death to the patient.
- About 10 per cent of OCD patients actually get worse over time, even with drug treatments (and psychological therapies), and so psychosurgery can be deemed a valid treatment for such patients.

KEY TERMS

Psychosurgery – a biological treatment of OCD through irreversible destruction/removal of brain tissue

Cognitive behavioural therapy (CBT) for OCD – a treatment of OCD that seeks to replace irrational thought processes underpinning the disorder with more rational ones

RESEARCH IN FOCUS

1. Why might it not be possible for individuals with severe OCD to give informed consent for psychosurgery?
2. Who would give consent for them?
3. Who else cannot give informed consent?

For information on research methods, see Chapter 7.

CBT

While drugs address the physical counterparts seen as underpinning OCD, **CBT** is instead focused on changing obsessional thinking, like with *habituation training* (HT), where sufferers relive obsessional thoughts repeatedly to reduce

the anxiety created. Intrusive thoughts are shown to be normal and patients come to understand that thinking about a behaviour isn't the same as actually doing it. Sufferers are taught to focus on their estimations of potential risks and realistically assess the likelihood of them occurring. Sufferers are encouraged to practise their new adaptive beliefs and to disregard their former maladaptive ones. Although CBT is seen as the most effective treatment for OCD, even higher success rates are found when it is combined with drug treatments.

Research

O'Connor *et al.* (1999) assessed the effect of combining CBT with drug medication. Patients received either drugs and CBT together, CBT only, drugs only or no treatment. Patients in all groups, except the no-treatment group, showed improvements, but most symptom reduction was seen when drugs were combined with CBT, especially if drugs were given for a period first. This suggests that the most effective treatment is to first administer drugs to reduce symptoms, especially anxiety levels, so that CBT can then have a more beneficial effect.

O'Kearney *et al.* (2006) assessed the ability of CBT to treat children and adolescents with OCD, finding it effective, but more so when combined with drug treatments, demonstrating how drugs and CBT can work together to alleviate the condition.

Jonsson & Hougaard (2009) found that CBT was better than drug treatments in reducing OCD symptoms, which suggests it's a more effective treatment than drug therapy.

Evaluation

Although CBT was acknowledged to be more effective and not to have the side-effects of other treatments associated with OCD, it isn't suitable for patients who have difficulties talking about inner feelings, or for those who don't possess the verbal skills to do so. Maybe such patients would be more suited to drug therapies.

Although drugs may not 'cure' OCD they may reduce anxiety and symptoms sufficiently for CBT to be successfully introduced, showing how the two treatments can be successfully combined.

Drug treatments are lengthy in comparison to CBT. Even if a patient shows improvements with drugs, they should continue taking the medication for at least twelve months to ensure their symptoms continue to improve.

STRENGTHEN YOUR LEARNING

1. Why is the biological approach also known as the medical model?
2. How do gene-mapping studies work?
3. Outline the procedure, results and conclusions of Grootheest *et al.*'s study into OCD.
4. What neural influences are thought to cause OCD?
5. What types of drugs are used to treat OCD and how are they each thought to work?
6. Outline the aims and conclusions of Koran *et al.*'s study into OCD.

ASSESSMENT CHECK

1 Just after his tenth birthday, Roscoe developed a nasty throat infection and a few weeks later he started to have persistent thoughts about being infected by germs, which caused him a lot of anxiety. He began repetitively washing his hands many times a day. He was diagnosed as suffering from OCD, a condition several members of his family have had. However, since he has begun taking medication that increases the level of serotonin in his brain, his symptoms have decreased.

Referring to the situation above, show how genetic and neural explanations may account for Roscoe's OCD. **[4 marks]**

2 Briefly describe the neural explanation for OCD. **[3 marks]**

3 Place a 'G' next to the two descriptions below that relate to the genetic explanation of OCD and an 'N' next to the two descriptions that relate to the neural explanation. One description will be left over. **[4 marks]**

Description	Type of explanation
Sees OCD as occurring due to faulty brain mechanisms	
Is seen as occurring due to repressed memories	
Sees OCD as linked to abnormal levels of serotonin	
Is tested by the use of twin studies	
Sees OCD as an inherited condition	

4 Outline and evaluate drug therapy as a means of treating OCD. **[16 marks]**

5 Discuss the biological approach to explaining OCR. **[12 marks]**

6 The tables below show data for reduction of OCD symptoms in patients treated with drug therapy or a placebo. **[3 marks]**

(i) What type of graph would be appropriate to plot this data?

(ii) Describe two features of this graph.

Participant	Score for reduction of OCD symptoms after treatment with drug therapy
1	28
2	36
3	62
4	29
5	38

Participant	Score for reduction of OCD symptoms after treatment with placebo
1	13
2	3
3	4
4	8
5	12

SUMMARY

Definitions of abnormality

- The deviation from social norms definition sees abnormality as behaviour violating accepted social rules.
- The failure to function adequately definition sees abnormality as an inability to cope with day-to-day living.
- The statistical infrequency definition sees abnormality as behaviours that fall outside of normal distribution.
- The deviation from ideal mental health definition sees abnormality as a failure to meet the criteria for perfect psychological well-being.

Characteristics of phobias, depression and OCD

- Phobias, depression and OCD are all mental disorders that can be described in terms of their behavioural, emotional and cognitive characteristics.

Explaining and treating phobias

- The behavioural approach explains phobias as occurring through the two-process model, where phobias are acquired through classical conditioning and social learning, and are then maintained through operant conditioning.
- Alternative explanations include the cognitive approach that focuses upon vulnerability through attentional bias and the evolutionary explanation, which sees phobias as having an adaptive value.
- Systematic desensitisation is a behavioural treatment that modifies phobias by constructing and working through hierarchies of anxiety-producing stimuli.
- Other treatments of phobias include drugs, which seek to reduce anxiety levels, and CBT, which seeks to modify the irrational thought processes associated with the condition.

Explaining and treating depression

- The cognitive approach explains depression in terms of maladaptive thinking, with Beck's negative triad seeing depression as occurring through three types of maladaptive thinking about the self, one's environment and the future.
- Alternative explanations include the genetic explanation that sees depression as an inherited condition and the behavioural explanation, which sees it as a condition learned from experience.
- CBT seeks to treat depression by modifying thought patterns to alter behavioural and emotional states.
- Other treatments include drug therapies, which treat the physical symptoms of depression through chemical means, and ECT, which treats the condition by providing electrical stimulation to the brain.

Explaining and treating OCD

- Biological explanations of OCD include seeing it as an inherited condition and as a condition associated with abnormal neural functioning.
- Alternative explanations include the evolutionary explanation that sees OCD as having an adaptive value, and the cognitive approach of explaining it in terms of maladaptive thought processes.
- Drug therapy attempts to treat OCD by addressing its physical symptoms.
- Other treatments include psychosurgery, which involves irreversible destruction of brain tissue, and CBT, which attempts to modify irrational thought processes.

5 Approaches in psychology

Introduction

The 'approaches' are the varying ways that any one area of psychology considers behaviour.

This chapter will cover the following areas of the specification:

- Origins of psychology: Wundt, introspection and the emergence of psychology as a science
- The biological approach
- The learning approaches
- The cognitive approach
- The psychodynamic approach
- The humanist approach.

In Year 1 you will likely study the basic assumptions of the three approaches listed above (biological, learning and cognitive).

In Year 2 you will likely study the psychodynamic approach, humanistic psychology and a comparison of the approaches.

Understanding the specification

- Origins of psychology: you need to have an awareness of the early history of psychology, particularly the work of *Wundt*.
- For the biological approach, the influence of *genes*, *biological structures* and *neurochemistry* on behaviour can be asked about separately from each other. You also need to be clear what the terms *genotype* and *phenotype* mean, including how to apply those terms to a behaviour example. Again, *the genetic basis of behaviour* and *evolution* and *behaviour* can each be asked about separately.
- Learning approaches need to be understood firstly in terms of the behaviourist approach, which involves *classical conditioning*, including Pavlov's research, and *operant conditioning*, including types of reinforcement and Skinner's research, and then secondly in terms of social learning theory, including *imitation, identification, modelling, vicarious reinforcement*, the *role of mediational processes* and *Bandura's* research.
- It is stated clearly what you need to know for the cognitive approach. Where it states '*make inferences about mental processes*', it is the ability of the theoretical and computer models that needs to be judged, not your ability to make inferences. However, you will need to be able to understand results of experiments and be able to write about schemas.
- The basic assumptions of the psychodynamic approach can be asked about specifically in this section of the specification.

- The role of the unconscious, the structure of personality – id, ego and superego – defence mechanisms including repression, denial and displacement, and the psychosexual stages are also mentioned in the specification.
- You will need to know the basic assumptions of humanistic psychology and you also need to be able to evaluate the approach.
- The specific key features in the specification include:
  - free will
  - self-actualisation
  - Maslow's hierarchy of needs
  - focus on the self
  - congruence
  - the role of conditions of worth
  - the influence on counselling psychology.
- The specification mentions that you need to be able to answer questions which require you to draw a 'comparison of approaches'. This means that you need to know how the approaches measure up and relate to each other in terms of similarities and differences.

These are the basic requirements of the specification. However, other relevant material is included to provide depth and detail to your understanding.

5.1 Origins of psychology: Wundt, introspection and the emergence of psychology as a science

Wundt

The origin of psychology as a discipline is widely thought to have occurred in Germany from the work of Wilhelm Wundt. In 1875, Wundt established the first psychology laboratory. He worked at Leipzig University and had a room dedicated to conducting psychological experiments. He later founded the Institut für Experimentelle Psychologie (the Institute of Experimental Psychology) in 1879 with his colleague Gustav Fechner. It is at this point in time when the discipline moved from the realms of philosophy, biology and physiology into psychology.

Figure 5.1 Wilhelm Wundt

Introspection

Wundt used **introspection** in his work. Introspection is the examination of one's own thought processes and Wundt's researchers were trained to examine theirs for feelings, emotions and sensations. This would be done in Wundt's room at the university in a controlled environment. The researchers would then report back to him what they had experienced and their analysis of that experience. Wundt found that these reports could not be replicated, and were therefore unreliable, as the experience was too subjective (meaning it was based solely on one person's opinion/viewpoint).

KEY TERM

Introspection – an early psychological approach favoured by Wundt that sought to understand the mind through examination of one's own conscious thought processes

The emergence of psychology as a science

Psychology today is seen as a scientific discipline and, as such, uses a variety of methodologies, many of which are empirical (scientific), to investigate human and animal behaviour. The legacy of the biological and physiological origins means that many psychologists apply the scientific method to their work and use empirical methods to test their hypotheses. This is not the case for all of psychology and some psychologists are not focused as much on the scientific aspects with their work. They argue that there will always be an element of subjectivity, as witnessed by Wundt.

One of the results from these varying viewpoints on whether psychology can be truly scientific is the differing methods used by psychologists to test behaviour. This means that they consider behaviour through varying viewpoints. They may look at it at a neuronal level or at a more social level. These viewpoints are called approaches and it is this aspect that we will be examining in this section of the book.

The approaches

Behaviour can be explained in lots of different ways. These differing ways of understanding and testing behaviour and thought are called psychological approaches.

The very different ways in which a behaviour can be understood can be demonstrated by the case of Elliot Rodger (see below).

IN THE NEWS

Ψ The Psychological Enquirer

Elliot Rodger's Retribution

Figure 5.2 Elliot Rodger

On 23rd May 2014 Elliot Rodger, aged 22, shot dead seven people, including himself, and injured seven more, after making a YouTube video in which he said he was going to stage a revenge attack. The shootings took place in Isla Vista, near the University of California-Santa Barbara.

His first victims were three men who lived in his apartment block and were known to him. He then proceeded to drive around in his car shooting people at random and killing three more people who he did not know, before finally driving his car into a parked car and shooting himself in the head.

The YouTube video, called *Elliot Rodger's Retribution*, that he made of himself the day before the shootings showed him talking about how he had been rejected by women and how he hated them for that. The attack was revenge for that rejection. He stated in the video: 'Tomorrow is the day of retribution. The day in which I will have my revenge.'

This event has been explained by some as being due to Elliot being a 'misfit', whose advances towards women were repelled.

This behaviour can be explained in many different ways and at many different levels. Psychologists see and explain behaviour this way and the approaches are those alternative perspectives.

So, Elliot's behaviour can possibly be explained by:

- his hormones/neurotransmitters or brain physiology (biological approach)
- his learning from experience (learning approach)
- his thought processes (cognitive approach)
- his unconscious mind (psychodynamic approach)
- his need for fulfilment (humanistic approach).

All these approaches have a different way of explaining the same behaviour. Five approaches, namely the biological, learning, cognitive, psychodynamic and humanistic approaches, will be discussed here, along with a comparison of all five approaches.

The basic assumptions of the biological approach will be outlined in the following section. In Chapter 6 (from page 251), we will consider biopsychology in more detail.

5.2 The biological approach

'We are survival machines – robot vehicles blindly programmed to preserve the selfish molecules known as genes. This is a truth which still fills me with astonishment.'

Richard Dawkins, *The Selfish Gene* (1991)

This approach sees behaviour as rooted in the physiology and biology of the body. It examines the processes that occur, and looks for how that may affect an individual.

KEY TERM

The biological approach – a means of understanding mind and behaviour focused upon the physiological mechanisms of the body, such as genetics, neurochemical imbalances or brain abnormalities

Basic assumptions

The core assumptions of biopsychologists are that behaviour is affected by:

1) Genetics

Biopsychologists believe that the **genes** an individual possesses influence his or her behaviour. This also means that there is a belief in the process of evolution. It is believed that behaviour evolves the same way as physical characteristics through the process of evolutionary adaptation. This then leads to the idea that the examination of animals can also usefully tell us about our own behaviour.

2) The central nervous system, which comprises the brain and spinal cord

The brain is seen as the main focus when explaining behaviour, as it is seen to be the origin of how the world is seen and acted upon by an individual.

3) The biochemistry of the body

Varying levels of the chemicals in the bodies found both in the brain (**neurotransmitters**) and the body (**hormones**) are thought by biopsychologists to be related to an individual's behaviour. They are believed to influence reactions to the environment.

The biochemistry of the body is a rapidly advancing approach in psychology due to the progression of technology and understanding of researchers about how the brain and body work.

The influence of genes on behaviour

There are two key terms which help show how genetics can influence the development of an individual:

Genotype

The **genotype** is an individuals' genetic make-up, which occurs at conception and provides the genetic code for how that individual will develop. Each individual is thought to have around 100,000 genes. The genotype dictates such characteristics as eye and hair colour and sets genetic potentials for behaviours, such as aggression, with fixed upper and lower limits. Each individual (apart from identical twins) has a genotype which is unique to them.

KEY TERMS

Genes – specific sequences of nucleotides in DNA or RNA transmitted by inheritance from one generation to another

Neurotransmitters – chemical messengers transmitted in cerebral fluid that convey information between neurons and from neurons to muscles

Hormones – chemical messengers transmitted in blood and other bodily fluids that inform the organs and tissues of the body how to function

Genotype – the inherited behavioural potential of an individual; their genetic make-up

Phenotype

The **phenotype** of an individual is the product of what happens when the genotype interacts with the environment. With a physical characteristic such as height the genotype dictates the maximum height an individual can reach but environmental factors such as nutrition will affect how likely the person is to achieve their potential height.

So, an individual's genotype might be that they have the genetic potential to be tall. The genotype relates to these genetic instructions. However, much like a planted seed, if the environment does not provide the optimum conditions then the individual will not fulfil their potential to become tall. For example, there may be a period of poor nutrition or they may take a drug which inhibits their growth. This means that the phenotype is the height they actually become, not their genetic potential. This is the same for psychological characteristics in that there may be a genetic predisposition to a behaviour but it may not express itself due to the environment inhibiting its development.

Genetic basis of behaviour

Figure 5.3 Research with identical twins is useful for investigating the basis of certain behaviours

Each individual is born, typically, with 23 pairs of chromosomes which have been inherited from their birth parents. These are our genotype and form the basis for our development. The work of geneticists and psychologists has suggested that there may be a genetic underpinning for certain behaviours.

Often the work is carried out on pairs of twins. As monozygotic (MZ or identical twins) are 100 per cent genetically similar, the likelihood of them both having a behaviour/disorder compared with the likelihood of non-genetically identical twins (DZ or dizygotic twins) gives an indication of how much the behaviour may be genetic.

If the MZ twins show a *higher* likelihood of sharing behaviours/disorders than DZ twins then there is argued to be a genetic component. This is thought to be because the only difference between the two pairs of twins is how genetically similar they are. If the shared behaviour is greater when they are more genetically similar, then the argument is that this is due to shared genetics.

Examples of concordance rates (shared behaviour) from twin research are shown in Table 5.1 below.

Table 5.1 Examples of concordance rates

Behaviour/ Disorder	Research	Concordance rate for MZ (identical) twins	Concordance rate for DZ (non-identical) twins
Schizophrenia	Gottesman (1991)	48%	17%
Bipolar depression	Craddock & Jones (1999)	40%	5–10%
Anorexia nervosa	Walters & Kendler (1995)	23%	9%

It should be noted that these are merely examples. There will be other research that shows differing concordance rates. It is also significant that the rate for MZ twins is not 100 per cent in any of these pieces of research. This suggests that, although there may be a genetic influence, it is not the sole reason for the behaviour/disorder occurring. If it was entirely due to genes you would expect the concordance rate for identical twins to be 100 per cent

KEY TERMS

Phenotype – the characteristics and behaviours exhibited by an individual, which occur due to an interaction between their genes and environment

Genetic basis of behaviour – the idea that genes inherited from one's ancestors form the basis of an individual's characteristics and behaviour

as they are 100 per cent genetically similar. It seems that some behaviours could be a mix of both genetics and environment.

Evolution and behaviour

The **evolution** of human behaviour is thought, by biological psychologists, to develop in the same way as the physical characteristics of humans. The idea is based around adaptiveness.

Initially, there is a random change, a mutation, in the genetic make-up of an individual which leads to a characteristic or behaviour occurring. If that change means that the survival and/or chance of reproduction are reduced for the organism then the gene is not passed on. If it, however, increases their chance of survival and reproduction then it gets passed on when they reproduce. This means the mutation has been adaptive for the individual and it then has every chance of being adaptive for subsequent organisms.

Biopsychologists believe that psychological characteristics such as intelligence and aggression were adaptive at the outset and therefore became part of the evolutionary process.

This process takes many generations to occur and so the process of one behaviour becoming part of the genetic make-up of humans is lengthy.

The behaviour in animals occurs, it is argued, in much the same way. Biopsychologists believe therefore that examination of non-human behaviour is useful.

In the case of humans, the organism is the individual. We may have a genetic mutation which makes us physically more able and attractive and therefore the mutation is adaptive. It is argued to be the same for behaviours.

Aggression is widespread in animal behaviour and can be seen to be adaptive in that it can improve survival rates in some situations and increase access to resources. It also helps protect territory. In finding a mate this can mean that the individual becomes more attractive to potential mates, and this therefore increases the individual's chance of reproduction.

Evolution works in the same way for humans. In simple terms, for example, being aggressive will, at some point in our ancestry, have been advantageous in terms of survival and increased chances of reproduction for an individual. This was perhaps due to acquisition of resources and protection of family. This in turn increased attractiveness to potential mates. This made the likelihood of passing the gene on much greater as there would have been more available and receptive mates. The genetics could then have been passed on to subsequent generations and the behaviour became more widespread.

There is research now into the genetic basis of aggression and the MAOA (or Warrior) gene, which is found in one-third of men (Lea *et al.* 2005 and 2006). This research is ongoing and is looking for potential genetic underpinning to aggressive and risk-taking behaviour.

Biological structures

The human body is a collection of biological systems which integrate to help us live. There are key structures within those systems which are particularly useful in terms of explaining the behaviour and psychology of the individual. These are outlined briefly below.

KEY TERMS

Evolution – a biological process where genes that increase survival chances become more widespread in a population through a process of natural selection

Biological structures – the physiological structures within an individual's body that are seen as integrating with each other to produce one's characteristics and behaviour

The nervous system

The **nervous system** is divided into two parts: the central and the peripheral nervous system. These are described in greater detail in Chapter 6 (Biopsychology), but they are outlined here in summary form to help lay the foundations of what is needed for you to access the rest of the text.

KEY TERMS

Nervous system – the network of neurons and fibres which transmit nerve impulses between parts of the body

Central nervous system – part of the nervous system consisting of the brain and spinal cord

Peripheral nervous system – a part of the nervous system responsible for the workings of the limbs and torso that accompanies the workings of the central nervous system

Neurons – nerve cells that transfer information throughout the nervous system

Endocrine system – a bodily messaging system consisting of glands that secrete hormones to regulate bodily functioning

Neurochemistry – the biochemistry of the central nervous system consisting of the transmission of neurotransmitters

The central nervous system

The **central nervous system** consists of the brain and the spinal cord. These are pivotal in transferring messages to and from the environment but perhaps more importantly, they act as the centre from which all the physiology of the individual is controlled. Breathing, eating, the heart beat and the senses are all co-ordinated from the central nervous system. This is why biopsychologists look to the brain for behaviour as most actions and reactions are generated from the central nervous system.

The peripheral nervous system

The **peripheral nervous system** sends and receives information to the central nervous system as it is the nervous system for the limbs and torso which collect information from the environment in terms of temperature, pain and threat. The autonomic system is important for survival of the individual and affects the reaction to threat, along with returning the body to normality (called homeostasis) after an acute reaction. The somatic system within the peripheral nervous system comprises the muscles attached to the skeleton and is therefore very important in movement. The somatic system also receives information from the skin, for example temperature of the environment.

The neuron

The **neuron** is a nerve cell which transfers information between the nervous systems. There are billions within the human body and they vary depending on their job. What neurons do and what their structure looks like is described in more detail in Chapter 7.

The endocrine system

The **endocrine system** is not part of the nervous system but is important in terms of the biochemistry of the body. Its main job is to maintain levels of hormones in the blood and other bodily fluids. This is done by using the glands in the body. The most important gland is argued to be the pituitary gland, which is located in the brain. This is sometimes called the 'master gland' because it instructs the other glands to secrete hormones when necessary. Biopsychologists argue that the level of a hormone in the system can affect the behaviour of an individual.

Neurochemistry

Neurochemistry involves the biochemistry of the central nervous system. Hormones (see page 257) are the chemicals which travel through the blood. However, in the brain, the transmission of chemicals is via the cerebral fluid (the fluid in the brain). These chemicals are called neurotransmitters and are seen to be very important by biopsychologists as they are thought to affect behaviour. An example of this is that high levels of a neurotransmitter called dopamine are related to schizophrenia. (See Chapter 7 for more on the process of synaptic transmission and neurotransmitters, page 255.)

Evaluation

The biological approach adopts scientific methods for investigation using measures which are largely objective (not subject to personal opinion) such as brain scanning and biochemical levels.

The biological approach strongly supports the nature perspective in the nature–nurture debate as it argues for genetic influence on behaviour.

Biopsychology research can result in practical applications being developed such as drugs that help the symptoms of people struggling with psychological problems.

It is argued that some biological explanations are too simplistic and do not do the complexity of human behaviour justice. This means they are reductionist as they can often fail to acknowledge the role of the environment in behaviour.

Below is a table referencing research studies included in this book that could be used to support the biological approach upon which they are based. Other such examples can be found within the book, including the paper three optional topics.

Element of the biological approach	Research studies
Genes	Vulnerability to depression – Wender *et al.* (1986), *page 176* Inheritance of negative schemas – Plomin *et al.* (2013), *page 176* Twin studies of OCD – Grootheest *et al.* (2005), *page 185*
Evolution	Insecure attachment types – Belsky (1999), *page 141* Avoidance learning – Cook & Mineka (1989), *page 167* Grooming in rhesus monkeys – Chepko-Sade *et al.* (1989), *page 188*
Biological structures	Trace decay in memory – Kandel (2006), *page 81* Brain scans of OCD patients – Saxena & Rauch (2000), *page 188* Case study of Broca's area – Domanski (2013), *page 266*
Neurochemistry	Serotonin levels in OCD patients – Hu (2006), *page 188* Bonding between couples – Kosfeld *et al.* (2005), *page 258* The effects of pheromones on menstrual cycles – McClintock & Stern (1998), *page 282*

STRENGTHEN YOUR LEARNING

1. What is the function of a neuron?
2. Where would you find neurotransmitters?
3. What is the difference between the central and the peripheral nervous systems?
4. What is the job of the endocrine system?
5. What is the difference between genotype and phenotype?
6. Why might certain behaviours be thought to be passed from generation to generation?
7. Does research support the idea that any one behaviour is completely genetic?
8. Explain how twin studies show that a behaviour might be genetic.
9. Explain the strengths of the biological approach.
10. What is meant by evolution?

ASSESSMENT CHECK

1 Explain what is meant by introspection. **[2 marks]**

2 Outline and discuss the biological approach to explaining behaviour. **[12 marks]**

3 Complete the table below by writing which definition A, B, C or D describes which term. One definition will be left over. **[3 marks]**

A This system acts with the central nervous system and transmits/receives information in most of the body.

B This is the system which affects the transfer and secretion of hormones throughout the body.

C This system is made up of the brain and spinal cord.

D This system helps digest food.

Term	Definition (A,B,C or D)
Central nervous system	
Endocrine system	
Peripheral nervous system	

4 Explain, with reference to one or more examples, how evolution might explain behavioural changes across generations. **[4 marks]**

5 Monozygotic (identical) twins sometimes do not achieve similar grades at school. With reference to genotype and phenotype, explain how this could occur. **[4 marks]**

6 Researchers investigating the possible genetic cause of a mental illness decided to use data on twin concordance rates to ascertain the possible level of genetic influence.

Monozygotic (identical) twins were 30% concordant and dizygotic (non-identical) twins were 15% concordant. The researchers used these figures to conclude that there is a genetic influence on developing the illness.

Explain why they were justified in reaching this conclusion. **[3 marks]**

7 Discuss the biological approach to understanding human behaviour. **[16 marks]**

5.3 Learning approaches

'Give me a dozen healthy infants, well-formed, and my own specified world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select – doctor, lawyer, artist, merchant-chief, and, yes, even beggarman and thief, regardless of his talents, penchants, tendencies, abilities, vocations, and race of his ancestors.'

John B. Watson, *Behaviorism* (1930)

Learning approaches take a very different focus on behaviour to the biological, and indeed, other approaches. It focuses on how we are a product of our learning and incorporates i) behaviourism, consisting of classical and operant conditioning, and ii) the social learning approach. Experience and environment are all-important for the learning approaches.

The behaviourist approach

The basic assumptions of the **behaviourist approach** are as follows:

- Behaviour is learned from experience.
- Only observable behaviour is measureable scientifically and it is only these behaviours that should be studied. Thought processes are subjective and difficult to test.
- It is valid to study the behaviour of animals as they share the same principles of learning (i.e. classical and operant conditioning).
- According to the behaviourist approach individuals are as a tabula rasa (blank slate), so there is no genetic influence on behaviour.

Classical conditioning

Classical conditioning is one of the behaviourist principles of learning and sees learning as occurring by association (see page 115). Both humans and animals can be classically conditioned and this is one of the ways they interact with their environment to learn behaviour.

The key idea is that learning occurs when an association is made between a previously neutral stimulus and reflex response. This reflex response can be positive or negative. If the association of the stimulus is with a positive feeling, then that positive feeling will arise whenever the person comes into contact with that specific stimulus. The same is true for negative associations.

For example, imagine that Catherine, an 18-year-old student, has started university and is having great fun in her fresher's week. A particular song is being played a lot during this time while she is out and she often dances to it. She will make a positive association with that song, and for years to come whenever she hears that song she will feel positive and happy. Similarly, if Catherine was miserable and homesick in that time she would feel bad whenever she heard the song.

KEY TERMS

Learning approach – a means of understanding behaviour that focuses upon environmental experiences through a combination of behaviourism and the social learning approach

Behaviourist approach – a means of understanding behaviour that focuses upon the effects of environmental stimuli upon observable responses through classical and operant conditioning

Classical conditioning – a type of learning where a response produced naturally by a certain stimulus becomes associated with another stimulus not normally associated with that particular response

The process can be seen in Figure 5.4 below.

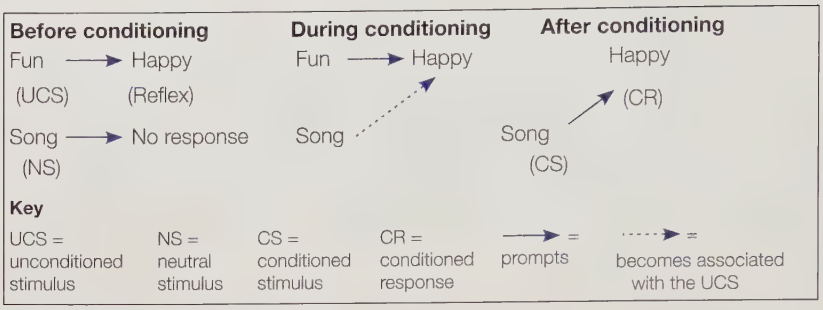


Figure 5.4 Classical conditioning

Classical conditioning can be applied to many different situations and you can probably think of a time when you have been classically conditioned in some way. One of the most memorable ways that someone can be conditioned is when they acquire a phobia (see page 154). They will make an association between an object/situation and fear.

This is illustrated by the rather unethical work of Watson & Rayner (1920) who classically conditioned a boy named 'Little Albert' to become phobic of rats (see page 164). Little Albert was his research name not his actual name. This was done by the presentation of an unconditioned stimulus of a loud noise at the same time as the rat. After following this procedure several times, Little Albert started to cry whenever he was shown a rat, even though he had previously not been scared of it.

Figure 5.5 Statue of Pavlov with his dog

Pavlov's research

Classical conditioning was documented for the first time by Ivan Petrovich Pavlov (1849–1936). He was a physiologist whose research work initially focused on the digestive system of dogs. To do this he had a dog harnessed to a bench with a tube coming out of its mouth and going into a jar. When his assistant came into the laboratory with the food for the dog Pavlov noticed that the dog salivated upon hearing the sound of the door. Dogs salivate automatically when they see food, but Pavlov's dog had clearly made an association with the imminent arrival of food when the door was opened. Pavlov decided to look at this association as his research.

When dogs hear a bell there is no reflex response (apart from maybe pricking up their ears). So, Pavlov rang a bell whenever the dogs were given food. The sound of the bell then became associated with the food. This meant eventually that whenever he rang the bell, the dogs would salivate, even if there was no food present.

This is illustrated in Figure 5.6 below.

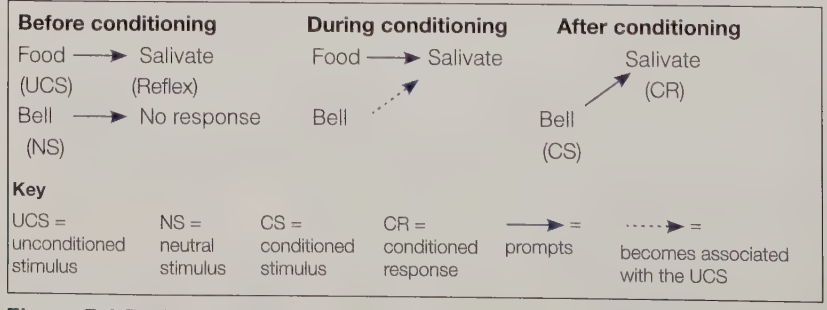


Figure 5.6 Pavlov's experiment

Pavlov also found out several other points about the process.

Stimulus generalisation

Pavlov found that if he varied the bell pitch and tone, the dogs would still salivate. This meant that if a stimulus has characteristics close to the conditioned stimulus, then the association would also be made to that new stimulus.

In the case of Watson & Rayner's 'Little Albert' study (see page 164) the little boy was not only frightened by the original white rat but also other small furry animals and white fluffy objects. This is an example of how the stimulus can be generalised to other similar things.

Stimulus discrimination

At some point there has to be cut-off point where the association will not be made and the **stimulus generalisation** will not occur. This is called **stimulus discrimination** and happens when the characteristics of the conditioned stimulus and an object become too different to be generalised.

Using the Little Albert case study as an example, he would not associate a large brown dog with fear as, although it is an animal, it varies in terms of size, colour and type.

Time contiguity (temporal contiguity)

Pavlov found that the association only occurs if the unconditioned stimulus and neutral stimulus are presented at the same time, or around the same time, as each other. If the time lapse between presentations is too great then there will be no association made.

Operant conditioning

Operant conditioning is another learning principle of the behaviourist approach. It works on the principle of learning by consequence. There are three key ways this can occur: positive reinforcement, negative reinforcement and punishment (see key terms).

If you apply this to a school-based example of whether to complete a piece of homework or not, you would find that the:

- **positive reinforcement** would be potential better grades, teacher approval and praise
- **negative reinforcement** would be avoiding disapproval from teachers and parents, avoiding a detention, teacher's anger.

Both these would be more likely to make you do the work.

However:

- **punishment** for not completing homework would be disapproval from teachers and parents, detention and the teacher's anger.

This makes NOT doing the homework less likely.

Operant conditioning is used widely in society as a principle in schools, prisons and the home.

KEY TERMS

Stimulus generalisation – when a stimulus becomes generalised to other related stimuli which are also associated with the conditioned response

Stimulus discrimination – when a stimulus is not associated with the conditioned response as it is too different from the original stimulus

Operant conditioning – a type of learning that occurs through the reinforcement or punishment of the consequences of an individual's actions

Positive reinforcement – where a behaviour is strengthened and thus is likely to recur due to positive consequences of that behaviour

Negative reinforcement – where a behaviour is strengthened and thus is likely to recur due to avoidance of negative consequences of that behaviour

Punishment – where a behaviour is less likely to recur due to negative consequences of that behaviour

Figure 5.7 Punishment is designed to make certain behaviour less likely in future

PSYCHOLOGY IN THE REAL WORLD

Tranquility Bay was a co-educational behaviour modification school in rural Jamaica. Its intake was adolescents aged from 12 to 19 who were mainly American and sent by their parents because they were out of control at home. Parents paid annual tuition fees of $25,000 to $40,000.

Tranquility Bay used various other methods to help 'modify' behaviour following behaviourist principles.

The school held group therapy sessions with students, who were encouraged to comment on what their peers said. The comments could be negative or positive.

There were two types of punishments used at Tranquility Bay:

- **Study Hall:** This was a form of detention where students stayed in a room for three hours and had to write an essay. This was a common punishment given for less severe infractions. It required students to stay in a small, non-air-conditioned room on lawn chairs for three hours. The idea was that the students would subsequently behave so that they could avoid the punishment (negative reinforcement of good behaviour).
- **Observation Placement:** Students had to lie flat on the floor, face down for a period of time decided by the staff. They were allowed to move around for ten minutes of each hour. This again was designed to negatively reinforce good behaviour.

Good behaviour was rewarded by a points system. If a student gained enough points they could move to the next level, which gave them more privileges such as being able to talk, when they were previously kept in silence or, at level 3, being able to phone home. Another form of punishment was the removal of points, making progression to the next level harder.

The school operated from 1997 until it was closed in 2009 for economic reasons and due to poor publicity.

(Information summarised from an article by Decca Aitkenhead, The Observer, *Sunday 29 June 2003)*

This is an example of operant conditioning used within education, in an extreme form. Schools are often governed by behaviourist principles where good behaviour is rewarded with commendations, gold stars, reward trips, etc. Punishment varies from institution to institution, with some schools using detentions, sin bins and exclusions.

These methods vary in their effectiveness and are dependent on the ages of the students. Take a moment to consider what forms of positive reinforcement and punishment you have encountered in your time at school. Did they work?

Research on operant conditioning

The 'Law of Effect' (see page 115) was generated from work by Thorndike (1898) and underpinned the principles of operant conditioning. Thorndike's work observing how cats managed to escape a puzzle box where they were required to pull on a latch was pivotal in formulating operant conditioning. The first time the cats were put in the box it took them time to escape as it happened by chance, but once they had learned that they could escape by pulling the latch they did so straight away in subsequent trials. This was because pulling the latch was positively reinforced as it led to them escaping. There was also a fish within sight outside the box, which acted as further reward once they were out of the box.

Skinner's research

B.F. Skinner was influenced by Thorndike's work and was a major force in the behaviourism movement. His work was prolific and focused around work in laboratories on animals, investigating the role of reward and punishment in shaping behaviour.

Skinner's box was important in this work and, just like Thorndike's work using the puzzle box, it was designed to be able to observe animal response in contrived situations. Skinner worked predominantly on animals such as rats and pigeons, but did conduct some experimentation on humans.

Skinner's box for rats contained a response lever which could prompt the release of a pellet down a chute so that the rat could eat it. There were also loudspeakers and lights which acted as visual and auditory signals

when needed, which acted as cues in some of the trials. Finally, the floor was metal and had the capacity to be electrified so that an electric shock could be administered to the rat if the experiment so required. The electric shock provided punishment to the rats. Actions to avoid the shocks would then be reinforced, an example of negative reinforcement.

Using the terms of operant conditioning in Skinner's research we can say that the pellet is the positive reinforcement, the electrified floor is the punishment and the negative reinforcement is the avoidance of the electrified floor or punishment.

Skinner observed that as soon as a rat learned that it would get a pellet when pressing the lever it would keep doing so (as the behaviour was positively reinforced). The pressing of the lever then becomes a learned behaviour as the rat learns that it will be rewarded with a pellet every time it presses the level. This is called continuous reinforcement.

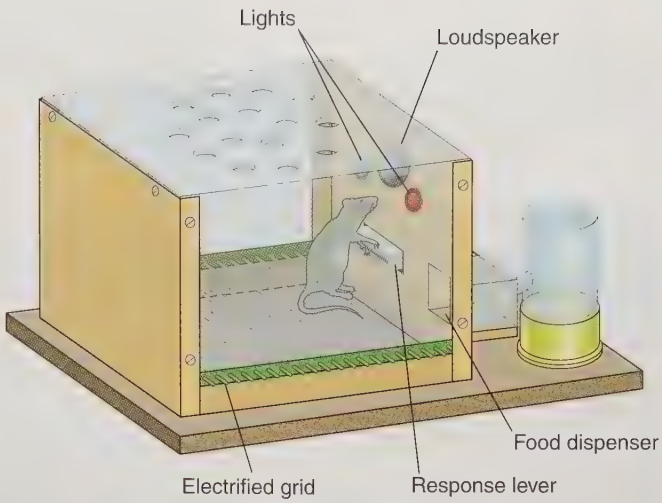


Figure 5.8 Skinner's box for rats

RESEARCH IN FOCUS

Skinner's work was conducted primarily on animals such as rats and pigeons.

1 What are the advantages of using animals in research?
2 What are the problems with using animals in research?

For more on research methods, see Chapter 7.

ON THE WEB

Skinner's work on operant conditioning was used in the Second World War, for training pigeons to guide and release missiles onto enemy targets.

There are various films on this use of his research available on YouTube. One worth watching to give you a feel for how operant conditioning was used can be found by searching for 'Skinner's Project Pigeon'.

YOU ARE THE RESEARCHER

How could you test reinforcement in humans as opposed to animals? Can you design a simple study to ascertain what form of positive reinforcement is most effective with students to ensure they complete school work to the best standard they can achieve? How would you do it ethically? What design would you use? Repeated measures or independent groups? Explain why you have chosen this type of design.

For information on research methods, see Chapter 7.

Types of reinforcement

Although the idea of reinforcement for shaping behaviour is a robust one, the frequency and way in which reinforcement is administered can affect the likelihood of it affecting the behaviour. The continuous reinforcement outlined above is just one way of shaping behaviour. Skinner's work considered how varying the reinforcement had an effect on how the rats learned.

KEY TERM

Schedules of reinforcement – the varying patterns of reinforcement that affect behavioural response rates in different ways

In his work five different types of reinforcement were investigated: continuous reinforcement, fixed interval, variable interval, fixed ratio and variable ratio. What these mean and the effects on behaviour are outlined in Table 5.2 below.

Table 5.2 Common **reinforcement schedules**, and associated patterns of response and resistance to extinction

Reinforcement schedule	Example	Pattern and rate of response	Resistance to extinction	Example of human behaviour
Continuous reinforcement (CRF)	Every single response is reinforced	Response rate is low but steady	Very low – the quickest way to bring about extinction	1 Receiving a high grade for every assessment 2 Receiving a tip for every customer served
Fixed interval (FI)	A reinforcement is given every 30 seconds (FI 30), provided the response occurs at least once during that time	Response rate speeds up as the next reinforcement becomes available; a pause after each reinforcement. Overall response rate is fairly low	Fairly low – extinction occurs quite quickly	1 Being paid regularly (every week or month) 2 Giving yourself a 15-minute break for every hour's studying done
Variable interval (VI)	A reinforcement is given on average every 30 seconds (VI 30), but the interval varies from trial to trial. So, the interval on any one occasion is unpredictable	Response rate is very stable over long periods of time. Still some tendency to increase response rate as time elapses since the last reinforcement	Very high – extinction occurs very slowly and gradually	Many self-employed people receive payment irregularly (depending on when the customer pays for the product or service)
Fixed ratio (FR)	A reinforcement is given for a fixed number of responses, however long this may take, e.g. one reinforcement every ten responses (FR 10)	There's a pronounced pause after each reinforcement, and then a very high rate of responding leading up to the next reinforcement	As in FI	1 Piece work (the more work done, the more money earned) 2 Commission (extra money for so many goods made or sales completed)
Variable ratio (VR)	A reinforcement is given on average every ten responses (VR 10), but the number varies from trial to trial. So, the number of responses required on any one occasion is unpredictable	Very high response rate – and very steady	Very high – the most resistant of all the schedules	Gambling

Variable ratio reinforcement is clearly the most successful for response rate and continuous effect. This is because there is no way of predicting when the next reward is going to be given and so the response rate continues at a high rate. This is the reason why slot machines and other forms of gambling are so successful. If someone does not know the next time they are going to win money they will continue putting money into the slot machine as they will think the next coin could be the winning one.

Skinner's analysis of behaviour

Although influenced by Thorndike, Skinner developed his own terms and described the processes involved in operant conditioning using the ABC of operant conditioning.

So, to analyse any behaviour it is necessary to consider:

1 **Antecedents:** What happens just prior to a behaviour being performed. In the case of the rat it could be a light

2 **Behaviours:** Skinner called these operants and the operant in the rat example is pressing the lever

3 **Consequences:** This is what happens after the operant. It is the result. So, for the rat it might result in a pellet being administered down the chute.

Evaluation

- Behaviourists use scientific methods to investigate human behaviour and there is seen to be credibility in their methods.
- They believe that behaviour is learned and therefore are strong proponents of the nurture side of the nature–nurture debate.
- Behaviourist ideas are used widely to help change behaviour which is seen to be negative and to encourage positive behaviour such as behaviour modification strategies used in prisons and schools.
- Behaviourists do not consider the influence of thought and cognitive processes as they are not observable.
- Behaviourists do not argue that we have control over our own behaviour, which is deterministic. This means that there are ramifications for legislation, such as the idea of someone not being in control of their actions if they commit a crime.
- Any spontaneous behaviour that occurs in humans is not easily explained by the behaviourists' principles of classical and operant conditioning.
- Behaviourists use animal research in their work and some argue that this is not appropriate due to the differences in the complexity of human and animal behaviour.

Social learning theory

The basic assumptions of this learning approach are as follows.

- Behaviour is learned from the environment, so therefore it does not regard genetics as an influence on behaviour.
- Behaviour is learned from observing others and the reinforcement or punishment they receive.

Social learning theory (SLT) is argued not strictly to be a behaviourist approach as it does not look solely at behaviour, it also considers cognitive processes.

KEY TERM

Social learning theory – a type of learning based upon the observation and imitation of models seen to be vicariously reinforced

Bandura's research

Albert Bandura (born 1925) is a learning theorist but not strictly a behaviourist as his theory also considers the cognitive thought processes that underlie our behaviour. He challenges Skinner's idea that reward and punishment will prompt or stop a behaviour automatically. He argues that reinforcers and punishments merely inform the individual of likely consequences and it is down to the individual as to whether their behaviour is affected by the potential consequences. This acknowledgement of thought processes has meant that the theory is sometimes referred to as social cognitive theory. Bandura's basic idea is that we learn behaviour by observing the positive and negative consequences of someone else's behaviour. This means we learn the behaviour vicariously – we don't receive the reward or punishment, the person who is modelling the behaviour does. They are referred to as the role model.

CLASSIC RESEARCH

The Bobo doll experiment – Bandura, Ross & Ross (1961)

Figure 5.9 Interactions with a Bobo doll

Bandura's study was designed to examine the role of a model on influencing an observer's behaviour. This had already been documented by Bandura & Huston, 1961, but Bandura was interested in seeing if the influence continued once the role model was no longer present.

Aims

1 To examine the effect of the continual influence of the model.
2 To examine if the sex of the model influenced same-sex and opposite-sex participants to a differing degree.

Procedure

1 There were 36 male and 36 female participants in the study. Their age ranged from 37 to 69 months, and the mean age was just over 4 years.
2 Two adults, a male and a female, served in the role of model for the experiment. There were eight experimental groups (each with six participants in). Half the groups observed an aggressive role model and the other half saw non-aggressive behaviour from their role model. The groups were further subdivided by gender and whether the model was the same sex or opposite sex of the participants.
3 Participants were put into a room one at a time and observed the adult role model's behaviour (either aggressive or non-aggressive). In the room there was a Bobo doll (an inflatable doll that is weighted at the bottom), a hammer and other toys. The aggressive model had to hit the Bobo doll with the hammer and shout abuse at it at the same time. Examples of the abuse were 'Punch him in the nose', 'He sure is a tough fella' and 'Pow'.
4 After witnessing the behaviour for about 10 minutes participants were taken down the corridor to another room. Initially there was aggression arousal, whereby the participants were taken straight to a room where they were told they couldn't play with the toys as they were being saved for other children, but that they could play with the toys in a neighbouring room. They were then allowed to go into that room with the experimenter (about 2 minutes later) and play with any toys that they wanted.
5 The room contained a range of toys: a 3-foot Bobo doll, a mallet, dart guns, etc. and 'non aggressive toys' such as dolls, crayons and a plastic farm. The participants were observed in that room for 20 minutes and rated for the extent they imitated the behaviour they had just seen.

Results

They found that the children who had observed aggressive behaviour acted more aggressively when observed and that boys acted more aggressively than girls. There was also a greater level of imitation of behaviour if the role model was the same gender as the child.

Conclusion

It seems then that there is a behavioural effect from observing aggressive behaviour and that this behaviour continues after a delay.

Evaluation

The effects of social learning are still only short term in this experiment and it is difficult to see whether there are any long-term effects on the children.

There are issues with interpreting the behaviour as all being influenced by social learning. Most people would hit a Bobo doll as it is designed for this purpose. This affects the validity of the experiment.

RESEARCH IN FOCUS

1 Bandura used observations as his research method. What are the advantages of this method?
2 What are the disadvantages of this method?
3 Are there any ethical issues with Bandura's research?
4 How might Bandura's study have lacked validity?
5 How might Bandura's study have lacked reliability?

For information on research methods, see Chapter 7.

YOU ARE THE RESEARCHER

Bandura's research on the Bobo doll examined the immediate effect of observing a role model and imitation of the behaviour. However, it is criticised for looking at the short-term effects of witnessing aggression.

How would you test for long-term effects other than just putting the children, years later, back in the room with a Bobo doll? How could you test to see how aggressive they were as adults? Ensure your design is ethical!

For information on research methods, see Chapter 7.

Key concepts

The following terms relate to the social learning approach.

Imitation

This is the term used to describe when an individual observes a behaviour from a role model and copies it. The term imitation is more appropriate than copying as the behaviour is often not able to be copied exactly; it is merely a simulation.

Identification

Identification is when an individual is influenced by another because they are in some way similar or wish to be like them. The 'model' is the person with whom they identify. There are many factors influencing the choice of model by someone. These include same gender and ethnicity, higher status and greater expertise. These need not all be present but identification does not occur unless there is a reason.

Modelling

When someone is influential on an individual in some way, they are referred to in social learning theory as a model. If the individual then imitates that person's behaviour later it is called modelling the behaviour. This term is only used when referring to behaviour that is imitated.

Vicarious reinforcement

This is the term used to describe the reinforcement the observer sees the model receiving. They do not receive the reward themselves; they see someone else get it. A reinforcement, such as a reward, makes a behaviour more likely to happen again. When it is vicarious, the person learns by observing the consequences of another person's behaviour, e.g. a younger sister observing an older sister being rewarded for a particular behaviour is more likely to repeat that behaviour herself.

KEY TERMS

Imitation – the simulation of a model's observed behaviour in order to gain a vicarious reinforcement

Identification – the increased likelihood of behaviour being imitated when it is performed by someone similar to an individual observing the behaviour

Modelling – the imitation of behaviour demonstrated by someone influential to an individual observing the behaviour

Vicarious reinforcement – a reinforcement seen to be gained by a person modelling a behaviour

Mediating processes – the thought processes occurring between observation and imitation of a behaviour that affect the behaviour's chances of being imitated

The role of mediating processes

We do not automatically observe the behaviour of a model and imitate it. There is some thought prior to imitation and this consideration is referred to as **mediating processes**. This occurs between observing the behaviour (stimulus) and imitating it or not (response).

There are four mediational processes documented by Bandura (1977): *attention*, *retention*, *reproduction* and *motivation*.

Attention

For a behaviour to be imitated it has to grab our attention. We observe many behaviours on a daily basis and many of these are not noteworthy. Attention is therefore pivotal in whether a behaviour has an influence on others imitating it.

Retention

The behaviour may be noticed, but it is not always remembered, which obviously prevents imitation. It is important therefore that a memory of the behaviour is formed for it to be performed later by the observer. Much of social learning is not immediate so this process is especially vital in those cases. Even if the behaviour is reproduced shortly after seeing it there needs to be a memory to refer to.

Reproduction

We see much behaviour on a daily basis that we would like to be able to imitate but that is not always possible. We are limited by our physical ability and for that reason, even if we wish to reproduce the behaviour, we cannot. This influences our decision whether to try and imitate it or not. Imagine the scenario of a 90-year-old lady (who struggles to walk) watching *Dancing on Ice*. She may appreciate that the skill is a desirable one, but she will not attempt to imitate it because she physically cannot do it.

Motivation

The rewards and punishments that follow a behaviour will be considered by the observer. If the perceived rewards outweigh the perceived costs (if there are any) then the behaviour will be more likely to be imitated by the observer. If the vicarious reinforcement is not seen to be important enough to the observer then they will not imitate the behaviour.

For example, Natasha, a little girl trying on lipstick, illustrates these processes. Natasha notices her mum putting on lipstick prior to going out for the evening. She then hears her dad complimenting her mum on how she looks. She notices this (attention). She remembers where her mum keeps her make-up and how to open the lipstick (retention). She is also able to apply it (reproduction). She knows she will probably be told off but she wants to get compliments from her dad too and wants to look grown up like her mum, which is more important than the telling off (motivation). In all likelihood Natasha will imitate the behaviour.

Evaluation

- The social learning approach takes thought processes into account and acknowledges the role that they play in deciding if a behaviour is to be imitated or not.
- The approach can successfully explain the initiation of certain behaviours; this has been shown in examples such as why someone would start smoking.
- Learning theory is not a full explanation for all behaviour. This is particularly the case when there is no apparent role model in the person's life to imitate for a given behaviour. This occurs, for example, in the case of psychopathic behaviour in just one individual in a family.
- Social learning theorists use a variety of research methods in their work; this means that they can sometimes be criticised for being unscientific.

Below is a table referencing research studies included in this book that could be used to support learning approaches upon which they are based. Other such examples can be found within the book, including the paper three optional topics

Element of the behaviourist approach	Research studies
Classical conditioning	The case of Little Albert – Watson & Rayner (1920), *page 164* Learned helplessness – Maier & Seligman (1976), *page 177* Classical conditioning in dogs – Pavlov (1902), *page 206*
Operant conditioning	Learning explanation of attachment – Dollard & Miller (1950), *page 116* Maintenance of car phobias – Di Gallo (1996), *page 165* Animal intelligence – Thorndike (1898), *page 208*
Social learning theory	Acquiring a vomiting phobia – Ost & Hugdahl (1981), *page 164* Bobo doll experiment – Bandura *et al.* (1961), *page 212* Identification with aggressive models – Pinto da Mota Matos (2011), *page 564*

INCREASE YOUR KNOWLEDGE

Bandura acknowledged the role of biology in his work on social learning and aggression. He thought that there were biological urges to be aggressive, but that social learning taught the individual how and when to be aggressive.

Taking this into consideration, it can be argued that Bandura's work is a combination of three approaches: learning, biological and cognitive. It is generally seen as a learning approach because it describes a learning process, but the mediating processes are cognitive, and he acknowledges that biological urges and instincts do exist. The biological aspect of his work, however, is not a key element to the theory, whereas the learning and cognitive elements are.

STRENGTHEN YOUR LEARNING

1. What is meant by the term behaviourism?
2. What are the three ways you can learn behaviour included by this approach?
3. What is the difference between classical and operant conditioning?
4. What does vicarious reinforcement mean?
5. What is the difference between negative reinforcement and punishment?
6. What is the role of mediating processes?
7. What is modelling?
8. Explain how schedules of reinforcement affect response.
9. Explain the strengths of the learning approach.

ASSESSMENT CHECK

1 Johnny and Jamie are friends with Spencer. Spencer gets a tattoo of a skull and crossbones on his forearm on his eighteenth birthday and everyone at school said how cool it was. A month later, on his eighteenth birthday, Johnny also gets a tattoo, whereas Jamie, whose parents disapprove of tattoos, says he has no intention of ever getting one.

Explain how the social learning approach would explain why Johnny gets a tattoo and Jamie does not. **[4 marks]**

2 Describe and evaluate one learning approach. **[12 marks]**

3 Copy and complete the table below by inserting which definition A, B, C or D best describes each term. One definition will be left over. **[3 marks]**

A Makes behaviour more likely to avoid a negative consequence

B Makes behaviour more likely to get a reward

C Makes behaviour less likely due to a negative consequence

D Makes behaviour more likely to get a negative consequence

Term	Definition (A,B,C or D)
Positive reinforcement	
Punishment	
Negative reinforcement	

4 Explain how Skinner's research contributed to our understanding of learning behaviour. **[4 marks]**

5 Make reference to classical conditioning to suggest how someone may acquire a phobia of trains. **[3 marks]**

6 Researchers investigating the effects of operant conditioning upon submission of homework in schools decided to use an independent groups design (Group A and Group B). They decided to use no punishment for late submission of homework with Group A and punishment for late submission of homework with Group B.

The number of late submissions in each group are shown in the table below.

Draw a suitable graph for the results in the table. Ensure the axes are labelled and that there is a title for the graph. **[3 marks]**

Group	Number of late submissions
A	62
B	21

7 Discuss learning explanations of human behaviour. **[16 marks]**

5.4 The cognitive approach

'If the Martians ever find out how human beings think, they'll kill themselves laughing.'

Albert Ellis (1962)

Mental processes

The foundation of the first cognitive school in 1959 by Ulric Neisser signalled the start of the cognitive psychology movement which became a major force in psychology. Cognitive psychologists believe that reference should be made to thought processes in order to explain behaviour.

The following assumptions are made:

- Thought processes can be, and should be, studied scientifically. Therefore, introspection is seen as too unscientific and that well controlled laboratory studies can investigate what we are thinking.
- The mind works like a computer in that it has an input from our senses which it then processes and produces an output such as language or specific behaviours.
- Stimulus and response is appropriate but only if the thought processes that occur between the stimulus and response are acknowledged (this is a direct criticism of behaviourism).

The study of internal mental processes

Cognitive psychologists endeavour to work out what thought processes are occurring from the behaviour an experiment suggests. They apply the scientific method and have devised some clever ways in which to examine thought. Although we are aware of our thought processes, there are often times when we are actually unaware of what thoughts led us to behave a certain way and so the experimental conditions used widely by cognitive psychologists are really important in understanding those situations.

An example of lack of awareness is outlined in the Invisible Gorilla experiment below.

KEY TERMS

The cognitive approach – a means of understanding the mind that focuses upon the idea that internal mental processes underpin behaviour

Internal mental processes – the thought processes occurring in the mind between a stimulus and a response

CLASSIC RESEARCH

Gorillas in our midst: Sustained inattentional blindness for dynamic events – Daniel J. Simons & Christopher F. Chabris (1999)

This is a classic example of a cognitive experiment designed to test the processes of perception and how they differ from person to person.

Aim

Simons & Chabris' experiment was designed to see how much individuals could be unaware of in their visual field. It seems that focused attention on a particular task could mean that other information could be missed. This experiment set out to test what is missed in a dynamic (moving) scene as previous research had focused on static stimuli.

Procedure:

1 There were 228 observers who watched the films shown. The films showed two teams of 3 basketball players, one team wearing white T-shirts and the other wearing black. An orange basketball was passed between the players and observers were asked to keep a tally of the number of passes. In one condition, the easy one, they were asked to keep a mental score of the number of passes. In the difficult condition they were asked to tally the number of throws and the number of bounces from player to player.

2 There were two types of video, transparent (where the film of the players was altered to be partly see-through) and opaque, where no such effect was used.

3 Half the observers watched films where a woman holding an umbrella walked in among the basketball players while they were playing. The other half watched films with a man in a black gorilla suit walking among the players.
There were therefore four film types:
- Transparent/Umbrella Woman
- Transparent/Gorilla
- Opaque/Umbrella Woman
- Opaque/Gorilla

4 Observers were then asked to immediately write their counts on paper and were also asked several questions, one of which was 'While you were doing the counting, did you notice anything unusual on the video?' Some results were discounted if the counting was inaccurate or the observer was aware of what the experimenters were testing. 192 results were included in the final analysis.

Results

Simons and Chablis found that:

1 Only 54 per cent of the observers noticed the gorilla or the umbrella-carrying woman (unexpected event)
2 More observers noticed the unexpected event in the opaque condition
3 When the task was harder (transparent) slightly less of the observers noticed the unexpected event.

Conclusion

This seems to indicate that we miss much of what we see in our visual field due to inattention.

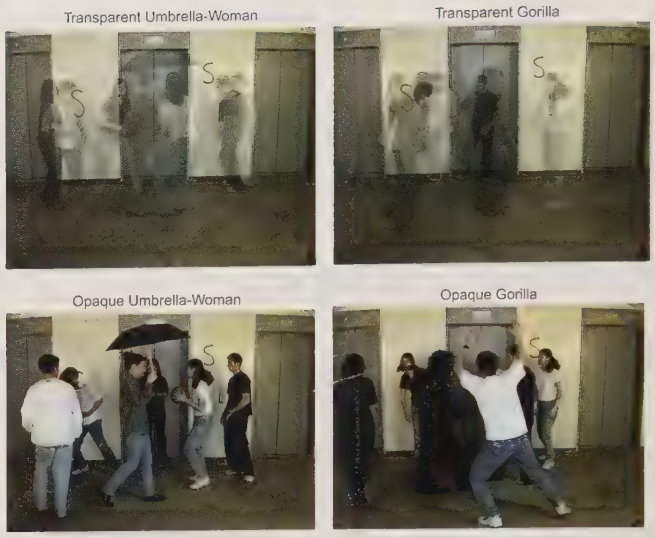


Figure 5.10a–d Stills from the films shown by Simons and Chabris. Figures provided by Daniel Simons.

Evaluation

The results are reliable as the experiment has been modified and rerun on many occasions and similar results found.

The experiment could be criticised for its lack of mundane realism as the task is not an everyday scenario.

(This research was published in *Perception*, 28, 1059–74. See **www.dansimons.com** or **www.theinvisiblegorilla.com** for more information.)

ON THE WEB

You can try the experiment, and various modifications of it, by searching YouTube for 'selective attention test' or 'The Monkey Business Illusion'.

However, you know about the gorilla. . . so it won't work on you! Try it on people who are unaware of the experiment.

Find out more from Daniel Simons' website:

www.dansimons.com

The role of schema

KEY TERM

Schema – a collection of ideas about a person or situation formed through experience which helps the individual to understand and predict the world around them

Schemas are a cognitive representation of our ideas about a person or situation. They are formed through experience and allow us to predict what may happen in our world. This seems to be important to us as humans.

Our schemas are unique to each individual as their experience of the world is unique to them. This ultimately means that the way we see the world is dependent on what has been experienced (or not), so thinking we all see things the same way is misguided. Our schemas mean we see our own version of reality. There is a cultural effect in that people from the same cultures form similar schemas due to shared experience. However, it is our personal experience that dictates the schemas we form.

This is best illustrated by the example of memory, which lends itself particularly to examining the influence of schemas. This is covered in more detail in Chapter 2 (Cognitive psychology: memory). Bartlett's 1932 'War of the Ghosts' study particularly illustrates how external influences can affect our memory of the event (see page 86).

Theoretical and computer models

Theoretical and **computer models** can be used to explain and make inferences about mental processes.

Cognitive psychology advocates the use of theoretical models as it supports a scientific approach to enquiry and testing. By taking a behaviour and looking at the thought processes that happen 'behind the scenes', cognitive psychologists will often describe the process in a series of distinct steps. This is well illustrated in memory with models such as the multi-store model of memory (see page 52).

This model has a series of steps which illustrate how a memory goes from sensory input to long-term memory. It shows how memories are forgotten as part of that process, and also how they get to pass on to the next stage. For example, they move from sensory memory to short-term memory when they are paid attention to.

The use of models means that the components can be tested individually and examined in detail. If the data from these experiments does not 'fit' with the model it can be adjusted. It also means that areas of the brain can be identified as specific to certain tasks, which supports the model (but only when it supports the model in question).

One of the core assumptions of the cognitive psychology approach is that the mind functions like a computer. However, how useful that comparison is, is debatable. There are both similarities and differences (see Figure 5.11 below) but many cognitive psychologists believe that, despite the differences, it is useful for the cognitive psychologist to use this analogy in their work.

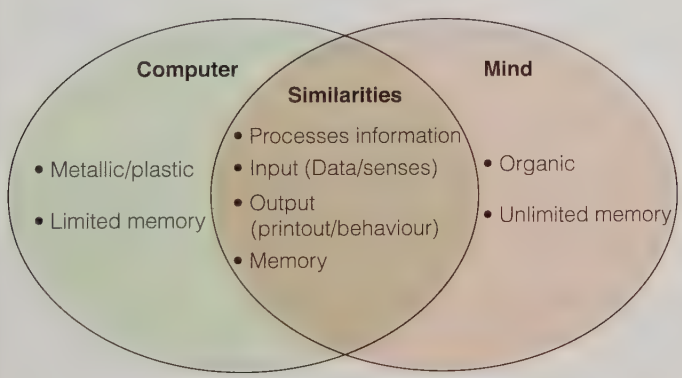


Figure 5.11 Similarities and differences between the mind and a computer

KEY TERMS

Theoretical models – explanations of cognition that see thought processes as occurring in a series of distinct steps between a stimulus and a response

Computer models – an explanation of cognition that sees the mind functioning as an information processing device (input, process, output)

Information processing model – an explanation of cognition that sees the mind operating like a computer to input and process sensory information in order to facilitate a behavioural output (response)

Information-processing model

The **information-processing model** is one way that cognitive psychologists apply the idea of computational models to the human mind and draws on the similarities between the two. This model dominated research in the 1980s and still has strong influence today.

The model is a three-stage process which is argued to explain behaviours. The general process is outlined below in Figure 5.12.

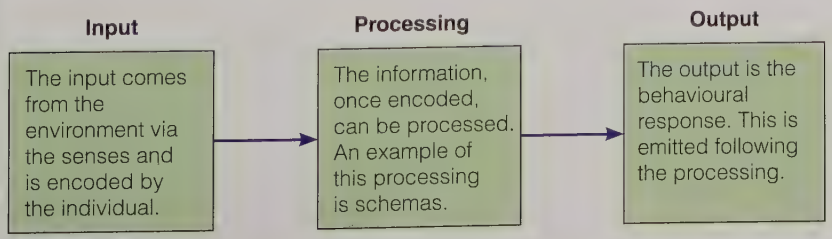

Input
The input comes from the environment via the senses and is encoded by the individual.
Processing
The information, once encoded, can be processed. An example of this processing is schemas.
Output
The output is the behavioural response. This is emitted following the processing.

Figure 5.12 The information-processing model

This can be illustrated by an everyday example. Imagine Rob, a young man, is in a supermarket when he sees an old lady struggling to reach the top shelf for a packet of biscuits. He offers to get them down for her and reaches up for them.

The flow diagram in Figure 5.13 illustrates how the information-processing approach would be applied to this behaviour.

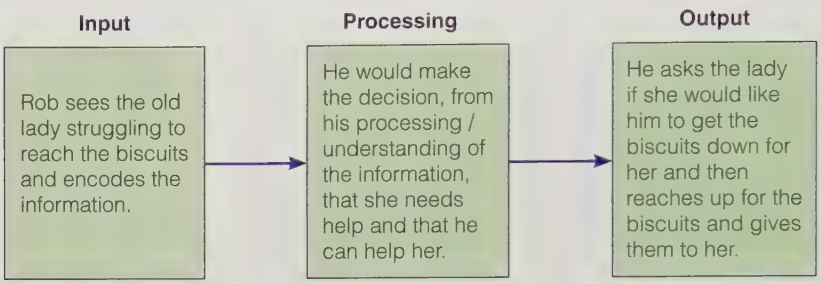

Input
Rob sees the old lady struggling to reach the biscuits and encodes the information.
Processing
He would make the decision, from his processing / understanding of the information, that she needs help and that he can help her.
Output
He asks the lady if she would like him to get the biscuits down for her and then reaches up for the biscuits and gives them to her.

Figure 5.13 An example of the information-processing model

The use of theoretical models is part of this assumption that the human mind is like a computer. The way a computer works is by a series of processing steps, and cognitive psychologists see no reason why behaviour should not be explained the same way. Theoretical and computer models allow them to do this.

KEY TERM

Cognitive neuroscience – a combination of cognitive science, cognitive psychology and neuroscience that seeks the biological basis to thought processes

The emergence of cognitive neuroscience

Cognitive neuroscience is a discipline that is a combination of several other disciplines, notably cognitive psychology, cognitive science and neuroscience. Its main focus is to look for a biological basis to thought processes, specifically at how the neurons explain those processes.

The discipline has emerged as technology has advanced. This has meant that as brain scanning machines (see Biopsychology, Chapter 6) have advanced, so too has the ability to investigate how the brain activity might underpin thought.

Originally the discipline of cognitive science emerged from cognitive psychology as the search for biological influences progressed. Cognitive science formed formally at a meeting in the Massachusetts Institute of Technology (MIT) in 1956 where many papers that were presented used rigorous scientific methods. Using the word 'science' at that time distanced the discipline from psychology, which was perceived to lack a scientific stance. The discipline believed that it was necessary to consider physiological reasons for thought and that the mind/computer analogy was important in understanding how we think.

George Miller and Michael Gazzaniga first used the label 'cognitive neuroscience' about twenty years later following the recognition of neuroscience in 1971.Cognitive neuroscientists wanted to bridge the gap between cognitive science and neuroscience, hence the term cognitive neuroscience. The discipline has grown as technology has progressed and continues to be an important discipline today.

Evaluation

- The focus of the cognitive approach is on the importance of thought processes. Thought processes are generally agreed to have an influence on behaviour and are important for understanding human behaviour.
- The cognitive approach uses experimental methods to research, which means the research has scientific rigour.
- The approach has produced valid descriptions of the cognitive processes that occur, and this informs treatment (for example, the cognitive theory of depression and CBT, see Chapter 4, page 172).
- The use of laboratory experiments means that the research lacks ecological validity as the thought processes measured could be argued to be artificial due to the context and tasks performed.
- The use of models can be seen as over-simplifying complex processes; for example, the role of emotion is sometimes overlooked.
- The approach is criticised for its comparison of people to computers, seeing people as mechanistic and lacking free will.

Below is a table referencing research studies included in this book that could be used to support the cognitive approach upon which they are based. Other such examples can be found within the book, including the paper three optional topics.

Element of the cognitive approach	Research studies
Schema	War of the Ghosts – Bartlett (1932), *page 86* Gorillas in our midst – Simons & Chabris (1999), *page 217* Negative thoughts and depression – Boury *et al.* (2001), *page 175*
Information processing model	Coding in STM and LTM – Baddeley (1966), *page 55* Cognitive control of depressive symptoms – Beevers *et al.* (2010), *page 174* Exposure to phobic stimuli – Thorpe & Salkovskis (2000), *page 166*
Cognitive neuroscience	Study of the episodic buffer – Prabhakaran *et al.* (2000), *page 66* Anterograde amnesia – Scoville (1957), page 60 Irrational thought processes in OCD patients – Gehrig *et al.* (2000), *page 189*

STRENGTHEN YOUR LEARNING

1. What is the role of schema?
2. What are three similarities between a computer and the mind?
3. What is the problem with using computer models to explain thought?
4. Explain the strengths of the cognitive approach.
5. What is one difference between the cognitive approach and the learning approach?
6. Explain the weaknesses of the cognitive approach.
7. What is meant by cognitive neuroscience?
8. Explain the information-processing model.

ASSESSMENT CHECK

1 Complete the table below by inserting which definition A, B, C or D best describes each term. One definition will be left over. **[3 marks]**

A This comes from the environment and is the first stage of the information-processing model.

B The format (e.g. visual) our memories are stored in

C A cognitive representation of our world

D This could be our behaviour and is the third stage of the information-processing model.

Term	Definition (A, B, C or D)
Schema	
Input	
Output	

2 Outline and discuss the cognitive approach. **[12 marks]**

3 Explain how cognitive psychology and cognitive neuroscience differ. **[3 marks]**

4 Joey lacks confidence when he goes on nights out with his friends. Even if a girl he likes comes to talk to him, he doesn't believe that she is attracted to him. His friends try to encourage him, but he doubts that he will ever find a girlfriend.

With reference to the passage, explain how the cognitive approach would explain Joey's situation. **[4 marks]**

5 Discuss how well theoretical and computational models can be applied to human behaviour. **[8 marks]**

6 Researchers investigating the cognitive biases of gamblers decided to ask participants to say out loud what they were thinking while playing on a roulette wheel at a casino. They recorded what the participants said using a small microphone. They then analysed the recordings using content analysis.

Explain why the methodology used could be argued to lack validity. **[4 marks]**

7 Discuss the cognitive approach to understanding human behaviour. **[16 marks]**

5.5 The psychodynamic approach

'Unexpressed emotions will never die. They are buried alive and will come forth later in uglier ways.'

Sigmund Freud (1904)

Sigmund Freud (1856–1939), an Austrian neurologist and psychiatrist, is widely acknowledged to be the founder of the **psychodynamic approach**. He developed a form of therapy known as psycho-analysis, which deals with the conflicts within the mind that have been developed through traumatic experiences. This approach is called the psychodynamic approach as it deals with the psychodynamics of the mind.

Notable psychodynamic psychologists were Anna Freud, Alfred Adler, Carl Jung and Erik Erikson.

Figure 5.14 Sigmund Freud, founder of the psychodynamic approach

Basic assumptions

As with all the approaches it is important to start with the basic assumptions of the psychodynamic approach. There are three core assumptions:

1 **Unconscious mind**. The psychodynamic approach believes that the driving force behind behaviour is the **unconscious mind**. The approach argues that if we have problematic or challenging behaviour then we must access the unconscious mind to sort it out.

2 **Instincts/Drives**. This approach argues that it is instincts and drives that motivate behaviour. This means that we are driven by instinct to go through a series of stages in development of our behaviour and personality. For example, this approach believes we have a sexual instinct from birth and as we develop we go through a series of five psychosexual stages until we reach the final stage at around 12 years old (see Psychosexual stages on page 227).

3 **Early childhood experiences**. Early childhood is believed to be pivotal in making us the person we are. Most of our psychological development is argued, by this approach, to be formed prior to the age of six.

KEY TERMS

The psychodynamic approach – a means of understanding mind and behaviour that sees unconscious psychological processes and childhood experiences as shaping adult personality and behaviour

Unconscious mind – the thoughts that occur without any conscious awareness

Conscious mind – the part of the mind we are aware of

Pre-conscious mind – the thoughts that occur just out of conscious awareness

The role of the unconscious

As the origin of behaviour, the unconscious mind is all important. The psychodynamic definition of the unconscious mind can be explained using the iceberg model. This draws an analogy between an iceberg and the mind. The tip of the iceberg above the surface of the water is the **conscious mind**, which is visible to all. However, below the surface is the unconscious mind. There is no clear way of seeing what lies beneath (the unconscious mind), but it is almost certainly greater in influence than the conscious mind.

Freud used three levels of thought to explain behaviour: the conscious, the pre-conscious and the unconscious. As stated, the conscious mind is the

part of our mind we can access. The **pre-conscious mind** is 'just below the surface' and is made up of the thoughts that may surface at any point into the conscious. Many of our memories reside here, as they are accessible, but not in the forefront of our thoughts. However, Freud argued that there are thoughts that will not easily surface, and perhaps may never do so, and these are in the unconscious mind.

The drives or instincts that motivate behaviour are also in the unconscious and therefore inaccessible. Traumatic or very unpleasant memories are also believed to remain here, not accessible to us but nonetheless driving behaviour.

The structure of personality

Our early experiences are believed to be vital in shaping personality. This approach argues that there are three parts to personality and the way they develop affects the person we become. The three elements are the **id**, the **ego** and the **superego**. How they influence personality is outlined below.

Id

This forms from birth to about 18 months old. It is also sometimes referred to as the 'pleasure principle'. This is because the dominant force of the id is to seek pleasure. It is the childlike, selfish and hedonistic part of personality, which focuses on the self.

Ego

The ego develops between the ages of 18 months and 3 years and can be referred to as the 'reality principle'. It is able to delay the id's drive for pleasure. It also keeps the balance of influence between the id and the superego (see below) as they are opposite forces. Neither the id nor the superego should become dominant in a personality; otherwise they could adversely affect the behaviour and mental health of the individual. It is the role of the ego to try to ensure this does not happen.

Superego

The superego is the last element of the three personality influences to develop and does so between the ages of approximately three and six years. Another name for the superego is the 'morality principle'. The role of the superego is to act as an individual's conscience. It is the opposite of the id in that it feels guilt and holds someone back from behaving a certain way if it is thought to be wrong. The superego helps a personality to form a moral code.

These three elements of the personality are shaped through experience and will affect how someone behaves. This approach suggests that much behaviour originates from the conflict between the three.

KEY TERMS

The structure of personality – the belief that there are three components to personality, developed through childhood experiences, which motivate thoughts, emotion and behaviour

Id – the selfish, irrational, pleasure-seeking component of personality

Ego – the rational, realistic component of personality that seeks to balance the unrealistic and opposite demands of the id and superego

Superego – the irrational, moralistic part of personality that acts as one's conscience

Defence mechanisms

Defence mechanisms are methods we unconsciously use to reduce anxiety. Anxiety weakens the influence of the ego, which needs to be strong to mediate between the id and the superego. It is for this reason that defence

KEY TERM

Defence mechanisms – strategies used to reduce anxiety, such as repression, denial and displacement

mechanisms are sometimes called 'ego defence mechanisms'. Defence mechanisms are therefore argued to be helpful.

Anna Freud, daughter of Sigmund Freud, described ten defence mechanisms in her book *The Ego and the Mechanisms of Defence* (1936). There are, however, thought to be more than ten. Sigmund Freud suggested 17. Table 5.3 outlines three – repression, denial and displacement – and their possible everyday effect on behaviour.

Table 5.3 Defence mechanisms and their possible effects

Defence mechanism	Outline	Effect on behaviour
Repression	An unpleasant memory is pushed into the unconscious mind where it is not accessible to the conscious mind and therefore cannot cause anxiety. It does, however, still affect behaviour in the unconscious mind.	There is no recall of the event or situation.
Denial	This is a refusal to accept the reality of an unpleasant situation. This reduces anxiety caused by that situation.	Someone may believe that the situation is not negative and that therefore it should not cause anxiety. This is not positive thinking, merely a resistance to accept reality.
Displacement	This is when the focus of a strong emotion is expressed onto a neutral person or object. This reduces anxiety by allowing expression of that emotion.	Someone may exhibit very strong emotion but focus it onto an uninvolved person or object.

If applying this to a relatively everyday situation it can be seen how they differ from each other. So, for example, Maria may have a particularly unpleasant boss who makes her angry.

On the one hand, if her unconscious mind used **repression** to protect the ego she would simply not remember when her boss had been unpleasant to her. On the other hand, **denial** would mean that she would believe that what her boss was saying to her was actually pleasant. **Displacement** would prompt her to take out her anger on her friends and family… or slam a door.

KEY TERMS

Repression – highly emotional and unpleasant thoughts are buried deep in the unconscious mind

Denial – a refusal to accept the reality of a situation

Displacement – a strong emotion is displaced from its target onto a neutral object or person

IN THE NEWS

Ψ The Psychological Enquirer

The murder of Susan Nason

The idea of memories being repressed and then surfacing has implications for the legal system. In one such case a man was convicted of the murder of an eight-year-old girl thanks to memories remembered 20 years after the crime.

In 1969, an eight-year-old girl called Susan Nason was murdered a few miles from her home in California.

Twenty years later, in 1989, Eileen Franklin-Lipsker reported to the police that she had remembered being present at the murder. She said that the memory had somehow been triggered and that the murderer was her father, George Franklin. She remembered many details of the crime and for that reason George Franklin was arrested.

There was much debate at the trial in 1990 as to whether a repressed memory such as the one Eileen described was reliable. The jury sided with the prosecution that it was and found George Franklin guilty of first-degree murder. The judge sentenced him to life in prison.

However, in 1995 the judgment was overturned. This was due to the prosecution's assertion that because George Franklin had stayed silent it was essentially a confession, which it was not. It was also due to the fact that many of the details Eileen remembered were available at the time in newspapers and that she could have read them or heard discussion about them. This was therefore not a recovered memory as argued by the defence.

It also became apparent, through the testimony of Eileen's sister, that Eileen had recalled the memory through hypnosis, which cast doubt on the reliability. Because the state Supreme Court had by 1995 ruled that testimony based on memories 'recovered' by hypnosis is unreliable, Eileen could have been barred from taking the stand at a new trial. In 1996 George Franklin was released and cannot face trial again for the crime.

Susan Nason's murderer has never been found.

Figure 5.15 The Supreme Court ruling that memories recovered by hypnosis are unreliable allowed George Franklin to be released from prison.

The idea of repression in particular is important because it has arisen in court cases. The defence would usually argue that the memory trace in emotional memories cannot be placed in the unconscious. In support, there is evidence that the suppression of memories weakens the memory trace.

CONTEMPORARY RESEARCH

Suppressing unwanted memories reduces their unconscious influence – Gagnepain, Henson & Anderson (2014)

Gagnepain and fellow researchers wished to examine whether the act of suppression actually affected the quality of the memory at a later date as this has real-world implications. The fallibility of memory is well documented in eye witness research.

Aim

Gagnepain *et al.* were interested in seeing whether suppressing memories into the unconscious mind does influence behaviour or not.

Procedure

For the research they concentrated on visual memories as these are often the kinds of memories that sufferers of post-traumatic stress disorder find the most intrusive.

Participants were asked to learn pairs of words and pictures combined. Examples of the objects used were ladders, binoculars and rabbit. This was designed so that when the word was presented to them they would automatically see the picture because of the association. Their brain activity, after the learning process, was measured using a functional magnetic resonance imagery (fMRI) brain scanner. This was done either while the participant was thinking of the picture when given the word, or while they were actively trying to suppress the picture from coming to mind.

Findings

To test the effect on the unconscious the researchers asked participants to look at distorted images to identify objects. Ordinarily they would be able to do so quickly and

successfully if they had recently seen the picture that was distorted, and that happened in the no-suppression condition. However, this was not the case when participants had been asked to try to suppress the image.

Conclusions

This suggests that the memory trace had been weakened by suppression. fMRI scanning of the activity seemed to indicate that the memories had been disrupted, and that behaviour may not be affected by suppressed memories as they cannot be recalled.

Evaluation

The relevance for this study on repression is important. It would seem to indicate that trying to forget could be a useful strategy to reduce the effects of trauma. It has been argued that repressed memories can exert influence on behaviour from the unconscious, but this research suggests it is not necessarily as great an influence as thought.

Figure 5.16 Can you recall suppressed memories?

Psychosexual stages

The psychodynamic approach argues that we have drives in our unconscious mind that dictate the stages we experience at varying points in development. The **psychosexual stages** of development are a series of stages every individual progresses through from birth to becoming an adult. The underlying unconscious drive is sexual.

KEY TERMS

Psychosexual stages – a series of stages all individuals progress through from birth to puberty, which shape adult personality

Fixation – an obsessive point of focus that originates from an unresolved trauma occurring during psychosexual stages of development

Oral stage

At birth a child enters the oral stage as the focus for pleasure and gratification is the mouth. A child will get pleasure from biting and sucking, which are oral activities. Freud believed this stage was important in formation of the personality.

Initially (as there are no teeth) Freud said the infant is in a stage called oral passive which is when the pleasure is mostly derived from sucking and swallowing, like breast feeding. Then the infant enters the oral aggressive phase which is when the infant gains their pleasure from biting and chewing, like when a child starts teething.

If a child is weaned from its mother's milk too early or too late, or feeding patterns were erratic it was argued that the child will become fixated at the oral stage. This means that this would have an unconscious effect on the personality. In an adult this **fixation** might mean, if orally passive (non-aggressive), that they are dependent, very passive and they will also be gullible. An orally passive person will believe anything you say.

Conversely an orally aggressive person will be aggressive, and this could be expressed either physically or verbally. Being orally aggressive or passive is dependent on the mother-child relationship.

Overall, people with an oral fixation are thought to be more likely to chew on pens, bite their fingernails and smoke.

Anal stage

Around 18 months old the child moves into the anal phase of development. The libido (or sexual energy) of the child moves focus from the mouth to

the anus. Pleasure is therefore gained from defecating. This is also the age at which the child is potty trained.

If the child loves using the potty and is overly keen to do so, then the child is thought to be in the anally expulsive stage. As an adult fixation this translates to a generous person who is demonstrative with their emotions. They also might have explosive fits of temper.

If the parents are very strict about potty training, the child will become anxious about using the potty and try to hold on to the faeces rather than use the potty. This stage is call anally retentive. An adult with an unconscious fixation at this stage will display personality characteristics like being very organised, very neat and reluctant to spend their money.

Phallic stage

Around the age of three the child enters the phallic psychosexual stage. The focus for pleasure moves, in this stage, it is argued, to the genitals from the anus. This stage is differentiated by the gender of the child. So, boys experience the Oedipus complex and girls go through the Electra complex.

Oedipus complex

At this point in his development Freud argued that a boy experiences intense sexual feelings for their mother. His father is then seen, by the small boy, to be a rival and he therefore wants him to leave so that the mother can focus on him. As the father is a lot bigger than the boy, the child feels threatened by his presence and feels potentially he could harm him, as he is a rival for the mother's affections. Freud said that the boy is worried that his father will castrate him as he may see him as a rival and this is called 'castration anxiety'.

In order to combat the anxiety the boy now feels, he has to befriend his father to reduce the anxiety. He does this by acting similarly to the father so he sees him as an ally, rather than a rival for the mother's affections. This is called identification. This reduces the castration anxiety felt by the boy and his Oedipus conflict is resolved.

For this to occur, Freud said that a father figure must be present. In cases where the mother is a single parent and there is no father figure for the boy to identify with, it is argued by psychodynamic theorists that he would be likely to grow up homosexual. In reality, of course, there is little evidence for this.

Electra complex

For girls at this stage, the realisation that they do not have a penis is very important. They think that the mother has removed it and so, around the age of three, they develop penis envy of males. When that desire is not fulfilled it is expressed through the desire for a baby.

The little girl desires the father in a similar way to boys with their mothers, and so she goes through the identification process in the same way. Fixations at the phallic stage can lead to a jealous and anxious adult.

Latent stage

At the age of about six, children enter the latent stage. The libido, or sexual energy is displaced throughout the body and it seems that this is a relatively calm time in development with no complexes to resolve or foci for pleasure in the body (according to Freud). The child essentially concentrates on being a child.

Neo-Freudians such as Erik Erikson did not believe that this period is without its problems and he in particular argued that children have all sorts of insecurities and inferiorities to deal with. However, in the theory suggested initially by Freud, this is a quiet period in development and there are no fixations or effects on the adult personality.

Genital stage

The libido once again is focused in the genitals at this stage, and that is where it stays for the rest of the life. Everyone reaches this stage and from here the child becomes an adult. It is the fixations in the first three stages that have an enduring effect on the adult personality.

A summary of the five psychosexual stages is outlined in Table 5.4. If there is a period of conflict then a fixation may occur which corresponds to the stage the individual is experiencing at that time, depending on their age. This fixation means that the adult may be affected by the fixation that is in their unconscious mind.

Table 5.4 The five psychosexual stages

Stage	Divisions within the stage	Age	Effect on behaviour in adults
Oral	Passive	0–18m	Smoking, dependent
	Aggressive		Aggressive behaviour, chew pencils
Anal	Expulsive	18m–3 years	Generous. Open with emotions
	Retentive		Organised, neat and mean with money
Phallic	Oedipus (boys) or Electra (girls) complex	3–6 years	Homosexuality
Latent	No divisions	6–11 years	No fixation occurs No effect on the adult personality
Genital		12 years	

Much of Freud's work used case studies as he documented the cases he worked with. Little Hans is an example of one such case study.

CLASSIC RESEARCH

The Little Hans case study – Sigmund Freud 1909

Herbert Graf was the son of one of Freud's friends, Max Graf. He became the focus of Freud's paper 'The analysis of a phobia in a five-year-old boy', which was published in 1909. Herbert was given the pseudonym of 'Hans' for the paper.

Hans had developed a phobia of horses and Max Graf documented what his son said, and did, in detail and passed the information on to Freud in the form of letters for him to analyse the boy's behaviour. Freud interpreted the boy's behaviour and reported dreams as a problem in the phallic psychosexual stage. It was an in-depth analysis which was written up as about 150 pages.

The key features of the analysis were:

1 Hans' fascination with his 'widdler' (or penis) was important. He noticed that animals, including horses, often had much larger penises than him. This interest was thought to be indicative of the phallic stage of development.
2 Hans' father went away for a while and Hans enjoyed having his mother's attention to himself. When his father returned, Hans resented his presence. This was argued by Freud to be evidence of the Oedipus complex.
3 Hans' little sister, Hannah, was born in this period and was a major influence, Freud thought, on Hans' behaviour. Hans was hostile towards his sister and Freud saw this as an extension of the Oedipus complex.
4 Freud argued that Hans was experiencing a sexual attraction to his mother and his father was therefore a rival for her affections. Freud also believed that Hans was experiencing castration anxiety.

The case caused controversy when it was published. The analysis was seen as immoral by some and simply inaccurate by others. However, it also had its supporters.

Hans recovered from his phobia. At the age of 19 Hans met Freud and reported that the phobia had not reoccurred. He even said that when he heard about the case study, he did not realise the report was actually written about him

Key issues and criticisms of the case study

Freud met the boy only once in a therapeutic setting and the information was forwarded by the father, so the source was potentially biased.

Freud had published his ideas about the psychosexual stages prior to his analysis and therefore possibly from a biased perspective. He could have been looking for evidence to support his ideas rather than looking through unbiased eyes.

Hans had seen a horse collapse in the street when he had been out walking one day when he was young. This could have shocked him and thus classically conditioned him. In theory, this could have been the source of the phobia, therefore disproving Freud's analysis.

Evaluation

The psychodynamic approach highlights how important childhood experience is to later development. This strengthens the case for children's rights reform. This means that children are, or should be, nurtured as their childhood serves as a precursor to adulthood.

Freud's ideas are used by some therapists today to treat mental health issues so this would suggest that there is a group of psychologists who feel that the psychodynamic ideas have merit and validity. There are also case studies from Freud's work that seem to show how his patients made a recovery following therapy.

Freud's ideas are very difficult to test reliably and so this leads to the argument that his ideas are unscientific and cannot be proven. Ensuring that a methodology has actually reached the unconscious mind is problematic.

Much of the evidence for the psychodynamic approach comes from case studies which lack reliability and cannot be generalised to the general population. The case studies that Freud used were culturally specific and came from the more wealthy people in Viennese society. Both these factors make generalisation difficult.

It is argued that people recovering from mental illness following psychotherapy could be due to spontaneous recovery over time rather than attendance to therapy. Eysenck (1952) did a meta-analysis of thousands of psychoanalytic patients and found that it worked for some (66 per cent). However, he also found that 70 per cent of people suffering from neurotic disorders and who did not receive treatment also recovered. This would suggest that spontaneous recovery may occur in some cases and that psychotherapy suits some people, but not others.

Below is a table referencing research studies included in this book that could be used to support the psychodynamic approach upon which they are based.

Element of the psychodynamic approach	Research studies
Personality	The F-scale and authoritarian personality – Elms & Milgram (1966), *page 31* Affectionless psychopathy – Bowlby (1944), *page 297* Assessment of psychoanalysis – Eysenck (1952), *page 600*
Defence mechanisms	Childhood memories of abuse – Williams (1994), *page 82* Suppressing unwanted memories – Gagnepain *et al.* (2014), *page 226* Battlefield trauma – Karon & Widener (1997), *page 82*
Psychosexual stages	Little Hans – Freud (1909), *page 447* The Electra complex – Wiszewska *et al.* (2007), *page 447* Exemption from military service – Snortum *et al.* (1969), *page 447*

STRENGTHEN YOUR LEARNING

1. What is meant by the unconscious mind?
2. What are the three components that form the structure of the personality?
3. What is the difference between the id and the superego?
4. What does a defence mechanism do?
5. What is the difference between denial and displacement?
6. What does repression mean?
7. What are the psychosexual stages?
8. Explain how a fixation at each of the first three stages could affect you as an adult.
9. Explain the strengths and weaknesses of the psychodynamic approach.

ASSESSMENT CHECK

1 Select from the characteristics A, B, C and D below to complete the table relating to the suggested fixation at a psychosexual stage. One description will be left over. **[3 marks]**

A Laughs a lot

B Homosexuality

C Smokes heavily

D Saves money

Psychosexual stage	Characteristic
Oral	
Anal	
Phallic	

2 The psychodynamic approach often uses the case study method of investigation. Explain one strength and one weakness of this study method as it relates to the psychodynamic approach. **[4 marks]**

3 Andrea is in a romantic relationship with Mark. Recently he has started to be less attentive towards her, and often does not respond to her texts and phone calls for a long period of time. She says it is because he is busy or that he has no phone reception. Her friends think he is seeing someone else.

Identify which defence mechanism would explain Andrea's behaviour and justify your choice. **[3 marks]**

4 Outline what is meant by the ego within the psychodynamic approach. **[2 marks]**

5 Discuss the psychodynamic approach. **[16 marks]**

5.6 Humanistic psychology

'I don't believe in types, I believe in people.'

Tom Branson (2012)

Humanistic psychology is sometimes referred to as the 'third force' in psychology as it views behaviour in a very different way to many of the other approaches (Maslow, 1962). It was founded in the 1950s. There was a questioning of the influence of the first force, psychodynamic psychology, and the way it focused on unhealthy development in psychoanalysis. The movement also arose from dissatisfaction with the deterministic and overly scientific way behaviourist psychologists (the second force) regarded behaviour.

Basic assumptions

Every individual is unique

Humanists believe that people are all different and should be treated as such. There is no point in trying to generalise to groups as there are so many differences within each group. This approach is therefore unlikely to try to generalise to groups of people and subdivide the population into clusters which all share a characteristic such as age or gender. This way of viewing people as unique individuals is called idiographic.

Figure 5.17 Humanists believe that we are all unique, like snowflakes

Free will

A core assumption of this approach is that individuals have **free will**. That means we have the ability to choose what we do and we are in control of our behaviour. Ultimately this means that we are in charge of how we develop and progress through life.

The **humanistic approach** does acknowledge that we have constraints on our free will, in that there are social rules, laws and morals that restrict whether we actually act upon our free will. Ultimately though, if we want to do something, we have the ability to choose to do it.

People should be viewed holistically

Humanists argue that there is no point looking at just one aspect of an individual. If only one part is considered then much of what is affecting them might be missed. For example, if someone is stressed and it is only their work life that is focused upon in therapy, there could be problems in their home life that might be overlooked. Humanists do not agree with focusing on childhood in therapy – they believe the whole life course should be considered. Humanists believe by seeing someone as elements rather than a whole means that much of what is important, and that makes the person who they are, is lost.

The scientific method is not appropriate to measure behaviour

Humanistic psychology does not describe itself as scientific. It argues the scientific method is too objective (free from personal opinion and bias) and yet humans are subjective in the way they think and behave.

KEY TERMS

Free will – the belief that individuals can exert conscious control over their thoughts and actions

The humanistic approach – an explanation of mind and behaviour, which perceives all individuals as unique and motivated to fulfil their potential and maximise their well-being

This therefore means that the methods employed by some approaches in measuring behaviour and thought are inappropriate as they try to measure without acknowledging the subjective experience of the individual.

Free will

Humanism assumes that individuals have free will. That is, we can decide and choose our behaviour. This is unusual as most of psychology believes much of our thought and behaviour is determined, that we have no choice.

This is a difficult concept to prove, but as proof is not important to humanistic psychology, this is not an issue. Humanists believe that we should consider the subjective experience of the individual, and in most circumstances a person will *feel* that they have chosen a course of action. To the humanistic approach this provides evidence of its existence.

An implication of the belief in free will is that this means that a person is responsible for their own behaviour, social or anti-social. In terms of the legal system this places the responsibility with the individual, meaning it is their 'fault'.

Humanists acknowledge that there are constraints on the choices available to an individual at any point, so it is not always the case that a person behaves in the way they would have preferred – they sometimes find their choices restricted by circumstance. This is not against the concept of making a choice, merely a result of the number of options being reduced.

Self-actualisation

KEY TERM

Self-actualisation – a peak state of existence that all individuals are motivated to achieve

The humanistic approach sees all individuals as having an innate drive to achieve their full potential. The achievement of that full potential is a state called **self-actualisation**. Both Carl Rogers and Abraham Maslow believed that individuals self-actualise in their own way and, as with behaviour in general, it is unique to them. The theories behind both Maslow's hierarchy of needs and Rogers' focus on the self and congruence are outlined in the sections that follow. Both theorists describe their own ideas on achieving self-actualisation.

When self-actualisation is achieved it can be described as the ultimate feeling of well-being and satisfaction. Theorists argue it is a drive we all have, but we do not all achieve it. The feeling is described in many ways, using the words ecstasy, peak experience, religious or spiritual experience. It is thought to be an intensely strong feeling of 'completeness'.

YOU ARE THE RESEARCHER

Humanistic psychology does not advocate the measurement of individuals. If you were to design a simple study to investigate whether someone is self-actualised or not, how would you do it?

What research methodology would you choose? How would you analyse the data? How would you classify them?

IN THE NEWS

Ψ The Psychological Enquirer

In 2008 Ian Usher, aged 44, split with his wife. He was originally from Darlington, County Durham, but had moved to Australia five years earlier. Following the split from his wife he decided that he needed to change his life as everything reminded him of her, so he put his life up for sale on eBay.

The sale comprised his Perth home with three bedrooms and all his belongings, which included his motorcycle, Mazda car, parachuting gear and a jet ski. The highest bidder would also receive an introduction to his friends and a job as a salesman (which was for a trial period before being made permanent). The winning bid totalled about £193,000.

With the money Ian initially travelled and then bought a Caribbean island and moved there. After a little time alone he met a new partner with whom he settled on the island and spent two very contented years there.

He has now put his Caribbean life up for sale, too, and is travelling the world with no long-term plans in place.

How would someone who is self-actualised appear? How would they act? Is Ian self-actualised? He owns few possessions and is happy exploring the world. His blog is also very positive and he seems content. However, the concept is difficult to test and to categorise someone as self-actualised is problematic.

Bearing in mind that humanistic psychologists do not regard 'proof' and measurement as important or relevant, they do not see a problem with this. For other psychologists this is a flaw in the concept.

Figure 5.18 Has Ian Usher achieved self-actualisation?

ON THE WEB

You can follow a blog of Ian Usher's life at:

www.ianusher.com/index.php

Do his posts support the idea that he may be self-actualised?

Self-actualisation is measured with the Personal Orientation Inventory developed by Shostrum (1963, 1977). Examples of the measure are shown in Figure 5.19.

Sample items from Shostrum's Personal Orientation Inventory

Time competence scale	Self-oriented scale
1. (a) I strive to predict what will happen in the future. (b) I do not feel it necessary always to predict what will happen in the future.*	4. (a) My moral values are dictated by society. (b) My moral values are self-determined.
2. (a) I prefer to save good things for future use. (b) I prefer to use good things now.*	5. (a) I feel guilty when I am selfish. (b) I do not feel guilty when I am selfish.*
3. (a) I worry about the future. (b) I do not worry about the future.*	6. (a) I am bound by the principles of fairness. (b) I am not absolutely bound by the principles of fairness.*
	7. (a) I feel I must always tell the truth. (b) I do not always tell the truth.*

Figure 5.19 Factors affecting the development of self-actualisation. Select one of the two statements. The starred (*) statement scores high for self-actualisation.

Focus

The theory of flow developed by Csikszentmihalyi in 1990 talks about 'flow' being a state when someone is completely caught up in a task, sport or activity so that they are totally focused on it. An example might be a runner who is fully focused on their performance and not thinking about other everyday matters. This state seems to increase personal growth because the person is driven to improve their performance (Daniels, 1988). They are also more likely to have the sort of peak experiences that are part of self-actualisation.

Attitude

An outward, more positive attitude means that self-actualisation is more attainable. If someone experiences a negative event, and adopts a negative attitude about it, this will affect their self-concept and prevent personal growth. For example, someone may experience a relationship breakdown and blame themselves. This attitude towards the part they played will impinge on their self-confidence and potentially stop subsequent relationships developing.

KEY TERM

Hierarchy of needs – a series of steps individuals need to progress through in order to self-actualise

Maslow's hierarchy of needs

'A musician must make music, an artist must paint, a poet must write, if he is to be ultimately happy. What a man can be, he must be.'

Abraham Maslow

Maslow considered that self-actualisation could be achieved in a series of stages called the **hierarchy of needs**. He wrote that the five basic needs a person has to meet are physiological, safety, belonging, self-esteem and self-actualisation (growth) needs. They arise in that order and if the first need is not met then all the other needs cannot be fulfilled. This is why the concept is called a hierarchy of needs. This is illustrated in Figure 5.20.

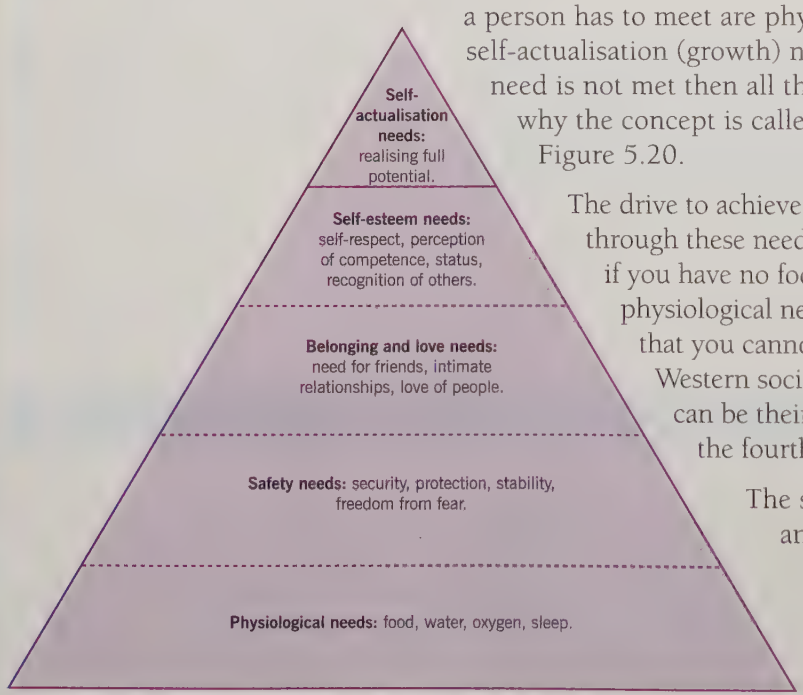

Self-actualisation needs: realising full potential.
Self-esteem needs: self-respect, perception of competence, status, recognition of others.
Belonging and love needs: need for friends, intimate relationships, love of people.
Safety needs: security, protection, stability, freedom from fear.
Physiological needs: food, water, oxygen, sleep.

Figure 5.20 Maslow's hierarchy of needs

The drive to achieve full potential means that we are all working through these needs in an attempt to self-actualise. It is clear that if you have no food then it will be difficult to move past the physiological needs. Likewise, living in a war zone may mean that you cannot achieve your safety needs. For some people in Western societies, where they are well fed, safe and loved, it can be their self-esteem that prevents them from fulfilling the fourth hierarchy.

The state of self-actualisation is not permanent and if all the five needs do not remain in place, an individual can move out of the state until all the needs are back in place. So, being hungry or being tired, even though a temporary state, will mean that the person is not meeting their needs.

Research

Sheffield *et al.* (2015) used the Personal Orientation Inventory to find a positive correlation between an individual's level of self-actualisation and psychological health, illustrating the beneficial effects of self-growth.

Alexander *et al.* (1991) found, from a meta-analysis of 42 studies, that meditation, especially transcendental meditation (a form of yoga), aided participants in growth towards self-actualisation. This supports the humanistic idea of individuals being able to experience self-growth.

Maslow (1950) examined the personality structure of 60 friends and historical figures he identified as having reached self-actualisation, finding 15 characteristics necessary to achieve such self-growth, such as being autonomous and able to perceive reality. This supports the existence of self-actualisation as an achievable state of being.

Yates (2011) used data collected from participants in 150 countries to find that the happiest people were those who had fulfilled various levels of needs, such as physiological needs, as predicted by Maslow. Those fulfilling basic needs felt their life was positive, while those also fulfilling higher levels of needs felt a feeling of joy, thus giving support to Maslow's hierarchy of needs.

'Whenever two people meet, there are really six people present. There is each man as he sees himself, each man as the other person sees him, and each man as he really is.'

William James (1892)

Focus on the self

Carl Rogers' work focuses on the self, or rather the 'selves', of the individual. He suggested that we have three selves which need to integrate to achieve self-actualisation. The three selves are:

- **The self-concept** – this is the self that can be described as the self you feel you are. It is similar to self-esteem and is affected by it. So, if someone has low self-esteem, their **self-concept** will be poor and they will have a distorted view of how capable they are. People may have a distorted view of themselves.
- **The ideal self** – this is the self you wish to be. It is who you are aiming towards becoming. Or, it is possible you are already there! A typical way of knowing whether someone is still working towards their **ideal self** is when you hear someone say, 'I wish I was more…' or 'I wish I was able to…'. This differs from the self-concept in that it is not who you think you are, it is who you wish you were.
- **The real self** – the third self is the **real self**, the person you *actually* are, not who you *think* you are or who you *wish* you were. This is actually a difficult self to demonstrate, as the subjective experience that is so important to humanist theory means that everyone will perceive or judge a person differently. Therefore, this logically means that ascertaining the real self is problematic.

Rogers felt that to be able to reach the state of self-actualisation it is important for the person to be fully functioning. This means that they have the opportunity to strive for self-actualisation and are actually doing so. It is not something that occurs by chance. Being able to pursue your potential means you are fully functional so any barriers that occur in the environment or from within are overcome.

KEY TERMS

Self-concept – the way you see yourself

Ideal self – the self you wish to be

Real self – the self that represents who you really are

Congruence – a state realised when all three selves (ideal self, perceived self and actual self) are integrated as one (become the same)

Conditions of worth – requirements an individual believes they must have to be loved

Congruence

Rogers said that to achieve self-actualisation it is necessary for a person to be congruent. This means that their ideal self and actual experience (self-concept and real self) are the same. It can also be achieved if they are very similar. However, this is difficult to achieve and therefore it means that many people do not realise their full potential and do not become self-actualised.

Rogers believed that an important part of achieving **congruence** is 'unconditional positive regard'. This means that at some point in their lives someone has to be loved for who they are by someone else. They need to be accepted, without proviso. This unconditional positive regard can come from parents or other family members, friends, a partner or, Rogers argues, a therapist. Wherever it comes from, it is essential to be able to reach full potential.

The role of conditions of worth

Conditions of worth are requirements that the individual feels they need to meet to be loved. This is also called conditional positive regard. Conditions of worth can be either real or perceived by the individual.

An example of this might be a child who feels they need to attain high grades in school for their parents to accept and love them. They feel that they will not be loved fully unless they meet that requirement. This feeling could be gained overtly from having been told by parents that they need to get good grades. It could also occur indirectly, if they have witnessed a sibling causing parents disappointment because of poor grades. Either way, if a child feels these conditions of worth it will mean they do not experience **unconditional positive regard** and find self-actualisation even more difficult to attain.

KEY TERMS

Unconditional positive regard – total acceptance received from another person

Counselling psychology – humanistic therapies that seek to foster self-growth in individuals

Research

Ismail & Tekke (2015) found evidence for Rogers' concept of unconditional positive self-regard through focus upon participants' self-image, ideal self and levels of congruence, as well as his concept of self-worth, through participants' ability to cope with challenges and tolerate failure and sadness. This therefore gives support to Rogers' concept of the self.

Flannagan *et al.* (2015) found that, over time, levels of unconditional positive self-regard predicted changes in levels of personal growth and increases in well-being in participants who had experienced trauma, highlighting the importance of unconditional self-regard in self-growth, as predicted by Rogers.

Akrivou (2013) reviewed research to find evidence that congruence between elements of the self was positively correlated with higher psychosocial development, highlighting the importance of congruence in achieving movement towards self-actualisation.

The influence on counselling psychology

The major practical application of the humanistic approach is Rogers' client-centred therapy. The client–therapist relationship is especially important and it is key that therapists can make their clients feel comfortable and accepted. This is to ensure the client feels unconditional positive regard. If the client feels they are able to say whatever they want to the therapist,

and that it will be accepted, then they will be able to be totally honest. This honesty will help them realise potential barriers to becoming congruent, and through working with the therapist will remove those barriers.

The influence of humanistic psychology on counselling was extensive throughout the 1960s and 1970s, though this waned in the late 1970s. The influence of humanistic counselling has reoccurred since the 1990s.

The initial decline in popularity was attributed to the focus on psychology as a science, and as a core assumption of the approach is that scientific measurement is not appropriate for people, there was a conflict with other psychologists. However, the positive psychology movement, which is influenced by Abraham Maslow's ideas, is gaining influence again. In terms of counselling and psychotherapy the client-centred approach is influencing other therapies, such as cognitive behavioural therapy (CBT), with the 'third wave' of CBT integrating humanistic ideas of subjective experience.

Research

Wampold (1997, 2006) reported that all psychological therapies should integrate a client-centred approach, like that of Rogers', to be effective, demonstrating the contribution of humanism to counselling.

Elliot (2002), from a meta-analysis of 86 studies, showed that humanistic therapies prompted a significant improvement in clients when compared with those not receiving treatment. Such effectiveness increases the influence of the therapy and thus the concepts of the humanistic approach.

Sexton & Whiston (1994) reviewed 76 studies to find that humanistic counselling was effective, with a key element being clients' perception of therapy being a success, rather than any objective measures of such success. This highlights the individual and non-scientific nature of humanistic counselling.

Evaluation

- The argument that individuals are all unique and should be viewed this way by psychology is supported by research that often finds within-group differences to be greater than between-group differences. This is illustrated by gender research, such as by Hyde (2005), which has, repeatedly, found that the difference within men (or women) as a group is greater than the difference between men and women.
- The ideas of the approach are hard to test scientifically and therefore support with empirical evidence. This is not something that the humanistic approach attempts to do as humanists believe it is inappropriate with humans as we are all unique.
- The subjective experience of the individual is difficult to test, but it is seen as a strength of the approach that it acknowledges the effect it has on the behaviour. As the approach rejects scientific measurement it does not try to be objective.
- Some humanistic concepts are vague. Describing self-actualisation is difficult and as a consequence it is hard to measure. This is not seen to be an issue by the humanistic theorists as they do not feel measurement is appropriate.

Concepts such as self-actualisation are widely accepted and the hierarchy of needs itself has been very influential. However, self-actualisation is criticised for being culture-specific as it is related to well in individualist cultures (where the focus is on the self) but not so well in collectivist cultures (where the focus is on the well-being of others).

Humanistic theory allows for personal development and change throughout one's lifespan and acknowledges that we can change as a consequence of our environment. This is in opposition to the childhood-focused stance of the psychodynamic approach.

Below is a table referencing research studies included in this book that could be used to support the humanistic approach upon which they are based.

Element of the humanistic approach	Research studies
Self-actualisation	Transcendental meditation and self-growth – Alexander *et al.* (1991), *page 237* Characteristics for self-actualisation – Maslow (1950), *page 237* Fulfilment of needs – Yates (2011), *page 237*
The self	Unconditional positive self-regard – Ismail & Tekke (2015), *page 238* Trauma and personal growth – Flannagan *et al.* (2015), *page 238* Congruence of the self – Akrivou (2013), *page 238*
Humanistic counselling	Client-centred therapy – Sexton & Whiston (1994), *page 239* Integration of client-centred approach – Wampold (2006), *page 239* Meta-analysis of client-centred therapy – Elliot (2002), *page 239*

STRENGTHEN YOUR LEARNING

1. What is meant by free will?
2. Explain what self-actualisation is.
3. How does Rogers think an individual achieves self-actualisation?
4. How does Maslow think an individual achieves self-actualisation?
5. What does Rogers say congruence is?
6. What is the role of conditions of worth?
7. What is unconditional positive regard?
8. What part does unconditional positive regard play in humanistic therapy?
9. How has the influence of humanistic ideas on counselling psychology varied over the years?

ASSESSMENT CHECK

1 Select from the descriptions A, B, C and D below to complete the table relating to the stages of Maslow's hierarchy of needs Frances may or may not meet. One description will be left over. **[3 marks]**

A Frances sometimes wishes she wasn't as shy as she is

B Frances has lots of friends

C Frances worries about being mugged

D Frances is hungry

Stage of the hierarchy	Description
Belonging	
Physiological	
Self-esteem	

2 Explain two strengths of the humanistic approach. **[4 marks]**

3 Nathan has always worked really hard at school. He is ambitious and wants to become a solicitor. His parents are very proud of him and celebrate his successes. However, of late, his grades at school have slipped. Nathan is feeling miserable and anxious.

Explain how conditions of worth explain Nathan's feelings. **[3 marks]**

4 Outline what is meant by free will. **[2 marks]**

5 Discuss the humanistic approach. **[16 marks]**

5.7 Comparison of approaches

This section looks at how the five approaches can be said to be similar, and different, to each other.

A series of six criteria has been chosen to draw a comparison. These are the debates: free will and **determinism**, nature–nurture, holism and reductionism, idiographic and nomothetic approaches. There is also a comparison on the extent to which the approach can be seen as scientific and whether it extrapolates from animal behaviour to human behaviour.

Each criterion will be dealt with in isolation and all five approaches will be considered with regard to this criterion. There is a diagram showing the approximate position of each approach along the debate continuum, so that it can easily be seen how the approaches compare. It should be noted that the position is approximate. If you feel the approach should be elsewhere, then for the purposes of the exam all you need to do is to be able to justify what you say with evidence.

KEY TERMS

Comparison of approaches – the contrasting of different psychological schools of thought in order to highlight their similarities and differences

Determinism – the belief that thoughts and behaviour are the result of forces beyond conscious control

Criterion 1: Free will and determinism

Summary of criterion: free will is the idea that what we do is voluntary and done through choice. We make our own decisions and choose our own course of action. Determinism is the opposite of this, where an individual's behaviour, choices and thought are determined by internal or external factors.

What the approaches say

Biological approach: this is strongly deterministic as it believes our behaviours are generated from biological roots and therefore outside of conscious control.

Learning approach: the behaviourist element is deterministic as it argues that behaviour is due to a stimulus/response reaction. It is even argued that we feel like we have a choice when there is no threat of punishment, but even in those circumstances we are driven to choose whatever gave us pleasure in the past. Social learning theory argues for a level of choice in whether we imitate observed behaviour or not, but that can still be said to be dictated by experience.

Cognitive approach: the way we process information from the environment is determined by our past experiences (schema) but cognitive psychology can be said to argue for an element of free will as cognitive therapy requires the individual to change their thoughts.

Psychodynamic approach: the psychodynamic approach has a core assumption that our behaviour and thoughts are dictated by our unconscious mind. As we have no control over our unconscious, it can be argued that the approach is strongly deterministic.

Humanistic approach: this is the only approach to fully advocate the existence of free will and the idea that we choose our path in life.

How do the approaches compare? See Figure 5.21.

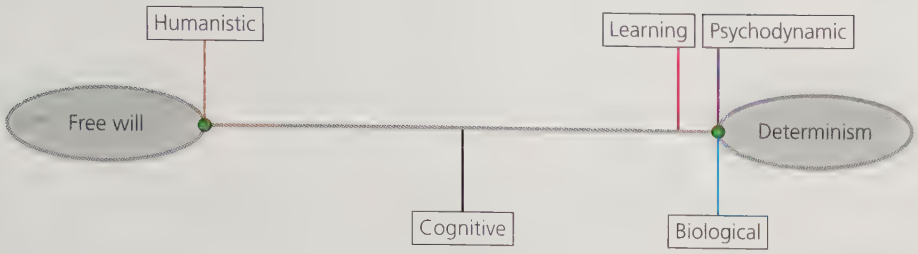


Figure 5.21 Free will and determinism continuum

Criterion 2: Nature–nurture debate

Summary of criterion: this debate asks whether the way we think, feel and behave is part of our genetic make-up (nature) or due to environmental influences (nurture). See page 357 for more detail.

What the approaches say

Biological approach: one of the core assumptions of this approach is that behaviour can be passed on through the genetic make-up of an individual and therefore this approach is on the nature side of the **nature–nurture debate**. There is an acknowledgement that the environment does affect development of genetic make-up. This is illustrated by the phenotype of an individual (see page 481).

Learning approach: behaviourism, in its purest form, believes that everyone is born free of predispositions and that it is their environment that forms their behaviour. For that reason they take an extreme nurture position. This is the same for social learning theory, as behaviour is learned from role models in the environment. There is no acknowledgement of the innate and inherited capacities of an individual.

Cognitive approach: the cognitive approach accepts both sides of the debate. On one hand it acknowledges that there could be innate thought mechanisms which are important for development of thought and language. However, the cognitive approach also recognises the role of our environment in shaping our thought processes. Processing is based on experience and therefore falls under the nurture side of the debate.

Psychodynamic approach: this approach falls onto neither side of the debate. It argues for the existence of innate drives, represented by the id. However, the way parents raise a child affects the formation of the other elements of the personality and therefore nurture plays a role, too.

Humanistic approach: the humanistic stance on the debate is difficult to ascertain, mainly because the humanistic approach does not believe the debate to be valid. It argues that the debate tries to make generalisations to large numbers of people as to whether who they are is innate or learned and therefore the individualism it advocates is at odds with the debate itself. However, looking at the ideas of the approach there seems to be an innate drive to be the best you can be (nature) but that the environment can aid or help that process (nurture). This means that the humanist theories seem to be interactionist.

KEY TERM

Nature–nurture debate – an assessment of the extent to which behaviour is the result of innate biological factors (nature) or environmental learning experiences (nurture)

How do the approaches compare? See Figure 5.22.

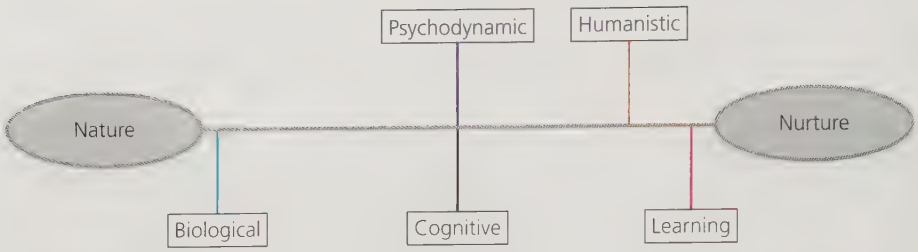


Figure 5.22 Nature–nurture debate continuum

KEY TERMS

Reductionism – a viewpoint that sees behaviour as best understood by reducing it down to its constituent parts

Holism – a viewpoint that sees behaviour as best understood as a whole rather than being the sum of its constituent parts

Criterion 3: Holism and reductionism

Summary of criterion: for any single behaviour there are differing levels of explanation, from the social context to the neuronal level. **Reductionism** can be defined as the attempt to explain any act by reducing it to a simpler level. **Holism**, however, is when the interaction of different factors affecting a behaviour is taken into account in an explanation – it does not focus on one specific part of an explanation.

What the approaches say

Biological approach: this approach is the most commonly associated with reductionism. Biological reductionism occurs due to the approach's efforts to explain any act or behaviour as due to a genetic, physiological or biochemical cause.

Learning approach: behaviourism is believed to have experimental reductionism due to its focus on stimulus response experimental design. It upholds a scientific approach to investigation and this means isolating elements of behaviours. For that reason it is seen to be reductionist.

Cognitive approach: it is argued that the cognitive approach supports experimental reductionism. This is where experiments are carefully controlled to isolate one variable to test. There is also the issue of 'decoupling', which is when one cognitive process is isolated for testing, but in the 'real world' many cognitive functions would be used, so looking in isolation lacks validity. However, there are attempts within the cognitive psychology community to look at context of experiments. This makes them less artificial and less reductionist.

Psychodynamic approach: this approach believes that all elements of an individual's behaviour should be taken into account and for that reason is not seen to be reductionist. It also does not employ scientific methods to investigate behaviour so does not display experimental reductionism. However, to say it is purely holistic can be argued to be erroneous due to the focus on drives as underpinning behaviour. As these are a key element they could be seen to be the explanation behind behaviour so therefore reductionist. However, it is widely considered that the psychodynamic approach is more holistic than reductionist.

Humanistic approach: the humanistic approach is holistic. It does not believe in reducing behaviour to specific elements and believes that the individual should be regarded as a whole. As it rejects using the scientific method to investigate behaviour it does not have any elements of experimental reductionism.

How do the approaches compare? See Figure 5.23.

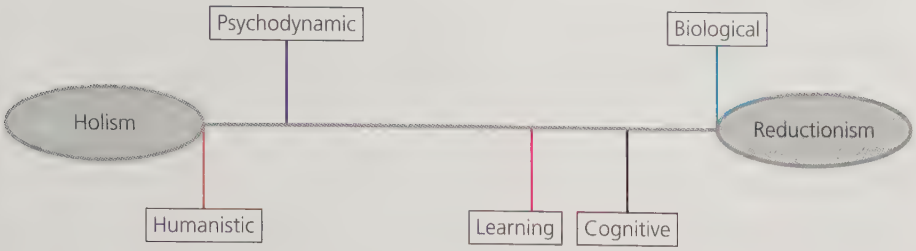


Figure 5.23 Holism and reductionism continuum

Criterion 4: Idiographic and nomothetic approaches

Summary of criterion: this criterion examines whether an approach is more focused on the uniqueness of individuals (**idiographic**) or whether it is trying to establish universal rules (**nomothetic**).

What the approaches say

Biological approach: this approach is nomothetic as it is working on the idea that we share a common physiology and biochemistry and that it is the differences within these that explain the variance in behaviour between people. Although case studies are used, these are to help comparison with typical behaviour and they are used to test general theories.

Learning approach: this is also a nomothetic approach as it seeks to establish laws in behaviour such as the law of effect. It believes we have shared processes for learning behaviour and therefore seeks to generalise to all.

Cognitive approach: the focus on scientific study of cognitive processing in groups of people together with the comparison of individuals to computers means this approach is nomothetic. It recognises that individuals have vastly differing thoughts but that the processes underlying these can be generalised to all humans.

Psychodynamic approach: this approach has elements of being both idiographic and nomothetic. It focuses on the unique childhood of each individual and its favoured method of study (using case studies) focuses on the individual (idiographic), but it does generalise to all by specifying the innate drives we act upon.

Humanistic approach: the focus of the humanistic approach on the uniqueness of individuals establishes this approach as firmly idiographic. A humanist psychologist would see no merit in trying to generalise from one individual to another. It could be argued that there are nomothetic elements, such as the hierarchy of needs, but the approach itself would describe itself as idiographic.

How do the approaches compare? See Figure 5.24.

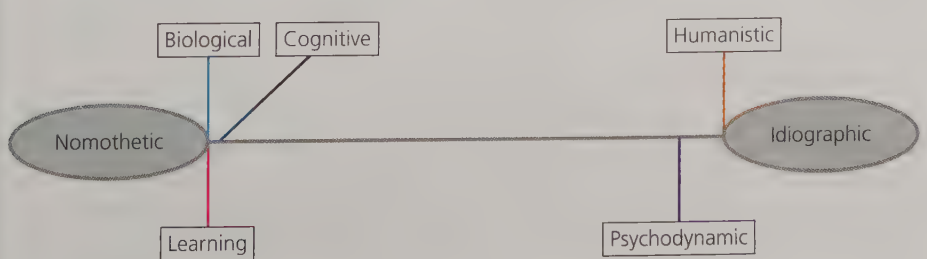


Figure 5.24 Idiographic and nomothetic continuum

KEY TERMS

Idiographic approach – a means of understanding mind and behaviour through focus upon the individual, with emphasis on the unique personal experience of human nature

Nomothetic approach – a scientific means of understanding mind and behaviour that seeks to establish universal laws common to all individuals

Criterion 5: Scientific methods

Summary of criterion: the core questions for this criterion are: Does the approach use **scientific methods** for investigating behaviour? Are the research methods used objective and reliable?

What the approaches say

Biological approach: the research methods used by this approach are some of the most scientific in psychology. They include measurement of biochemicals, brain activity using scanning technologies and physical measures such as biofeedback.

Learning approach: the behaviourist elements of the learning approaches examine observable behaviour and for that reason are seen to have scientific methods. There is no interpretation involved and so it is more objective than other methods. The cognitive element of social learning theory is not directly observable so is thus more susceptible to bias and therefore seen as less scientific.

Cognitive approach: well-controlled laboratory experiments mean that the data from cognitive experimentation is often reliable and therefore more scientific. However, thoughts are not directly observable, so they can be argued to be biased. This means that the approach is not seen to be as scientific in its methodology as the biological approach.

Psychodynamic approach: as the unconscious mind is being investigated in this approach it is, as yet, impossible to measure scientifically. Indeed, it can never be proven that methods designed to uncover the unconscious mind can actually access the unconscious mind. Certainly projective tests and dream analysis cannot prove that they access anything other than conscious thought. The methods are also subjective and require interpretation.

Humanistic approach: this approach does not believe that scientific measurement of behaviour is appropriate. Humanists believe that humans are unique individuals and therefore there is no point measuring them scientifically.

How do the approaches compare? See Figure 5.25.

Figure 5.25 Scientific methods continuum

KEY TERMS

Scientific methods – forms of research investigation that use standardised ways of making observations, in order to test predictions through objective, unbiased forms of analysis

Extrapolation – the belief that generalisation of findings from animal to human populations is possible due to their common physiologies

Criterion 6: Extrapolation

Summary of criterion: extrapolation considers the extent to which an approach uses animal research to provide a test for ideas. This is called extrapolation as there is a core belief that if your ideas relate to animals as well as humans then any behaviour can be generalised across both groups.

What the approaches say

Biological approach: animal research is used widely by this approach as it sees humans as being physiologically similar to animals. Biochemical tests and neurological examinations of animals are therefore appropriate and helpful.

Learning approach: behaviourist principles were developed through animal testing as the learning mechanisms humans use are argued to be the same as those of animals. This is not the case, however, for the social learning theory.

Cognitive approach: the fact that the cognitive approach is examining thought means that animal research is not appropriate for this approach. As animals cannot communicate through human language, it is difficult to ascertain what they are thinking. Some experiments on perception are run on animals, but this is the exception rather than the rule.

Psychodynamic approach: animal research cannot be used by this approach for similar reasons to the cognitive approach. The unconscious mind is difficult to test but would be impossible in animals.

Humanistic approach: animal research is conducted in a scientific manner and as this approach does not believe that scientific measurement of behaviour is appropriate, animal research is not used. The ideas of this approach are also focused on human development so there would be no reason to involve animals in the research.

How do the approaches compare? See Figure 5.26.

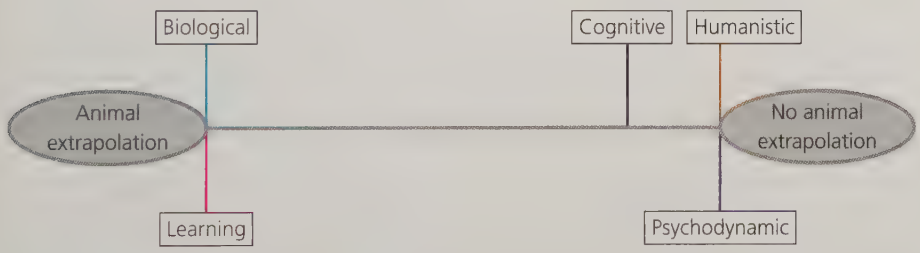


Figure 5.26 Extrapolation continuum

STRENGTHEN YOUR LEARNING

1. Which approaches argue for determinism rather than free will?
2. Explain how the learning and biological approaches compare with regard to the nature–nurture debate.
3. How do humanistic and cognitive psychologists compare with regard to the nature–nurture debate?
4. Which approaches adopt an idiographic stance?
5. Which approaches adopt a nomothetic stance?
6. Which approaches adopt scientific methods?
7. Which approaches agree with extrapolation to human behaviour from animal behaviour?
8. Give a similarity and a difference between the psychodynamic and the biological approaches.
9. Give a similarity and a difference between the humanistic and the cognitive approaches.

ASSESSMENT CHECK

1 Explain two similarities between the psychodynamic and the humanistic approaches. **[4 marks]**

2 Explain two differences between the cognitive and the learning approaches. **[4 marks]**

3 Explain ways in which the biological and psychodynamic approaches differ from each other. **[4 marks]**

4 Outline the biological approach and evaluate it through comparison with the learning approach. **[16 marks]**

5 Outline the humanistic approach and evaluate it through comparison with the cognitive approach and/or the biological approach. **[8 marks]**

SUMMARY

Origins of psychology

- Wundt's work is some of the first work done under the term 'psychology'. He used introspection in his work to examine the thoughts of his participants.
- Over the years, psychology has emerged as a scientific discipline due to the research methods used to investigate thought and behaviour.

The biological approach

- The biological approach assumes that behaviour is generated by genetics, brain physiology and biochemistry.
- The genotype of the individual is affected by the environment they live in. The product of that interaction is called the phenotype.
- Twin studies can be useful in ascertaining the extent to which genetics influences behaviour. Comparison of the concordance rates of identical and non-identical twins can give us an indication of how much genetics has had an influence.
- Biological psychologists believe that evolution has fine-tuned our behaviour to what is currently displayed. Some behaviours are believed to be adaptive and it is those behaviours that are successful in continuing through generations.
- The nervous system is divided into the central nervous system (the brain and spinal cord) and the peripheral nervous system, which is the nervous system throughout the rest of the body. Neurons are the messengers of the nervous system.
- The endocrine system transmits messages throughout the body using hormones.

The learning approaches

- Learning theorists believe behaviour is learned from the environment. This occurs through classical and operant conditioning, which collectively are behaviourist explanations, as well as through social learning, which includes both behaviourist and cognitive elements.
- Behaviourists believe that only observable behaviour should be studied and that it is reasonable to use animals to study human behaviour as the same principles apply.
- Classical conditioning is when an association is made between a previous neutral stimuli and a strong emotion.
- Operant conditioning is learning behaviour from consequences received. The most successful way is using positive reinforcement (reward) sporadically.
- Social learning is when behaviour is learned through seeing a role model receive reinforcement for the way they behave.
- Skinner is well known for his work on operant conditioning with rats and pigeons.
- Bandura is well known for his work on observational learning in children using a Bobo doll. It was from this work that his social learning theory developed.

The cognitive approach

- Cognitive psychology assumes that thought processes underpin behaviour and that the mind works like a computer.
- Schemas are a collection of ideas about the world formed through experience which helps the individual to understand and predict the world around them.
- Cognitive psychologists use theoretical and computer models to understand what thought processes underlie an action or reaction.
- The information-processing model is one such model and likens human thought processes to a computer, with an input which is processed through to an output.
- Cognitive neuroscience has emerged as a discipline from out of cognitive psychology, mainly due to technological advances in brain-scanning technology.

Psychodynamic approach

- The psychodynamic approach believes the unconscious mind drives our behaviour and that innate drives motivate our behaviour.
- A key assumption is that early childhood experiences are pivotal in the formation of the adult personality.
- The unconscious mind plays a vital role and therefore the driving force behind our behaviour is difficult to access.
- There are three parts to our personality: the id, the ego and the superego.
- Defence mechanisms such as repression, denial and displacement are used to protect our ego from anxiety.
- Each individual also develops through the psycho-sexual stages of oral, anal, phallic, latent and genital stages.
- The phallic stage differs for males and females – boys experience the Oedipus complex and girls the Electra complex.

Humanistic approach

- Humanistic psychology assumes each individual is unique and should be regarded holistically.
- The approach also assumes that humans experience free will.
- Humanistic psychologists do not generally accept that measuring behaviour scientifically is appropriate.
- A key drive for an individual is to become self-actualised. This state is difficult to attain and establish.
- Maslow suggested that self-actualisation could be reached through attaining the four needs on the hierarchy of needs: physiological need, safety need, love and belongingness need and esteem need.
- Rogers believed you could become a fully functioning person if your real self, ideal self and self-concept are congruent.
- To be congruent it is necessary to experience 'unconditional positive regard' from another individual.
- Conditions of worth are the conditions someone feels are placed on them to be loved by family and friends.
- The influence of humanistic psychology on counselling psychology dwindled through the 1980s and 1990s but it has become more popular of late due in part to the positive psychology movement.

Comparison of the approaches

- Comparison of the approaches can be done by considering their stance on the key debates, their methodology and their use of extrapolation from animals.

6 Biopsychology

Introduction

Unsurprisingly, **biopsychology** as a discipline focuses on explaining behaviour biologically. This can be done in several ways, but the three core ways are: genetics, brain physiology and biochemistry. Chapter 5 (pages 199–204) discussed the use of genetics to explain behaviour. This chapter will predominantly focus on brain physiology and biochemistry.

The basic assumptions of biopsychology were also discussed in the previous chapter, alongside some of the core knowledge which will help you with this chapter. Make sure you are familiar with that content prior to reading and learning this chapter.

This chapter will cover the following areas of the specification:

- The structure and function of bodily systems, for example, the nervous and endocrine systems
- The structure and function of neurons and the synapse
- The fight-or-flight response, including the role of adrenaline.
- The structure of the brain and localisation of function
- Ways of studying the brain
- Biological rhythms: the types and the regulators of the rhythms.

Understanding the specification

- For this part of the specification the emphasis is often more about understanding rather than evaluating. Follow the wording of the specification very closely as, if something is mentioned, it can be asked about specifically.
- You will need to know about *the divisions of the nervous system* including both the central and peripheral (somatic and autonomic) systems but within the peripheral system you could also be asked about the somatic and autonomic divisions.
- You could also be asked about *the structure and function of sensory, relay and motor neurons.*
- Describing *the process of synaptic transmission*, ensuring you can refer to neurotransmitters, excitation and inhibition, is also important to know as they are all listed on the specification.
- You will also need to know *the function of the endocrine system* including the glands and hormones within the system.
- Additionally, you need to understand *the systems involved in the fight-or-flight response*, and be able to write about *the role of adrenaline.*

- In terms of brain physiology, you should know about *localisation of function in the brain* (particularly the motor, somatosensory, visual, auditory and language centres; Broca's and Wernicke's areas) and *hemispheric lateralisation*. *Split-brain research* is mentioned specifically, as is *plasticity* and *functional recovery of the brain after trauma*.
- You need to be able to describe and evaluate ways of studying the brain. These are specifically named as *scanning techniques* such as *functional magnetic resonance imaging* (fMRI), *electroencephalogram* (EEGs) and *event-related potentials* (ERPs), together with *post-mortem examinations*.
- Finally you should know about *biological rhythms*. You should know how to define and give examples of *circadian*, *infradian* and *ultradian*. You should also understand the difference between these rhythms. Similarly you need to be able to define, describe and evaluate the effect of *endogenous pacemakers* and *exogenous zeitgebers* on the sleep/wake cycle.

These are the basic requirements of the specification. However, other relevant material is included in this chapter to provide depth and detail to your understanding.

6.1 The influence of biological structures on behaviour: the divisions of the nervous system

'Physics investigates the essential nature of the world, and biology describes a local bump. Psychology, human psychology, describes a bump on the bump.'

Willard Van Orman Quine (1969)

KEY TERMS

Biopsychology – a psychological approach that seeks to explain mind and behaviour as products of an individual's physiological processes

Divisions of the nervous system – the interconnected sub-divisions that comprise the nervous system

Central nervous system (CNS) – division of the nervous system consisting of the brain and spinal cord

Peripheral nervous system (PNS) – division of the nervous system responsible for the workings of the limbs and torso that accompanies the workings of the central nervous system

The nervous system of humans is divided into the **central nervous system (CNS)** and the **peripheral nervous system (PNS)**.

The CNS comprises the brain and spinal cord and the PNS is the nerves outside the brain and spinal cord. From these two initial **divisions**, the system divides further.

The CNS

The brain is involved in psychological processes and a central function is to ensure life is maintained. There are many parts to the brain, some of which are more primitive and concerned with vital functioning. Others are involved in higher order thinking such as problem solving and planning.

The spinal cord facilitates the transferral of messages to and from the brain to the peripheral nervous system (PNS). It is also involved in reflex actions such as the startle response.

The PNS

The PNS extends beyond the CNS and transmits messages to the whole body from the brain and vice versa. It has two divisions: the **somatic system** and the **autonomic system**.

The somatic system's main job is to transmit and receive messages from the senses such as visual information from the eyes and auditory information from the ears. It also directs muscles to react and move.

The autonomic system helps transmit and receive information from the organs and is further divided into two systems: the **sympathetic system** (which increases activity) and the **parasympathetic system** (which conserves the body's natural activity levels by decreasing activity or maintaining it). There is more information on the sympathetic and parasympathetic systems later in this chapter (see page 231).

KEY TERMS

Somatic nervous system – division of the PNS that transmits information to and from the senses and from the CNS

Autonomic nervous system – division of the PNS that transmits information to and from internal organs to help sustain their processes

Sympathetic nervous system – branch of the autonomic nervous system that helps facilitate the increase of bodily activities

Parasympathetic nervous system – branch of the autonomic nervous system that helps facilitate the decrease of bodily activities

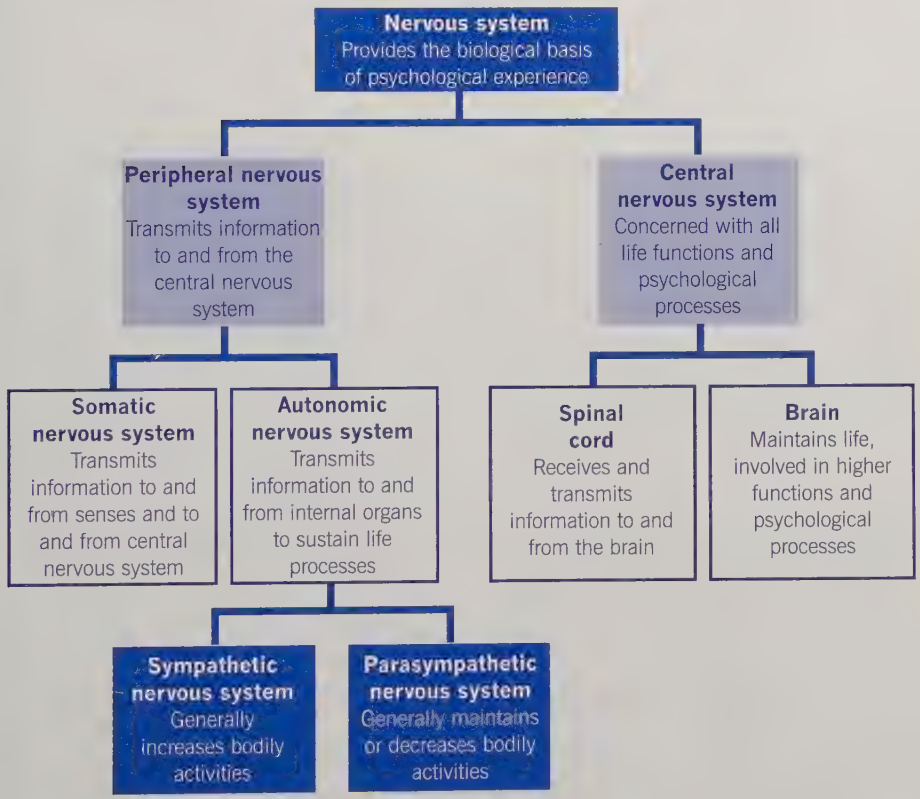

Nervous system
Provides the biological basis of psychological experience
Peripheral nervous system
Transmits information to and from the central nervous system
Central nervous system
Concerned with all life functions and psychological processes
Somatic nervous system
Transmits information to and from senses and to and from central nervous system
Autonomic nervous system
Transmits information to and from internal organs to sustain life processes
Spinal cord
Receives and transmits information to and from the brain
Brain
Maintains life, involved in higher functions and psychological processes
Sympathetic nervous system
Generally increases bodily activities
Parasympathetic nervous system
Generally maintains or decreases bodily activities

Figure 6.1 Divisions of the nervous system, with an indication of the function of each division

6.2 The structure and function of sensory, relay and motor neurons

Neurons receive information and transmit it to other cells. There are thought to be around 100 billion neurons in the brain and 1 billion neurons in the spinal cord. Neurons are an essential part of a massive communication system within the body.

There are three main types of neurons, all of which have a different role to play. See Table 6.1 which summarises the structure and function of these neurons.

KEY TERMS

Sensory neurons – nerve cells that transmit sensory information to inform the brain about an individual's internal and external environment

Relay neurons – nerve cells that transmit information between different parts of the CNS and connect sensory and motor neurons

Motor neurons – nerve cells that transmit information from the CNS to organs, glands and muscles to help sustain their functions

Table 6.1 The three main types of neuron

Neuron type	Function	Structure
Sensory	**'Sensory neurons'** tell the rest of the brain about the external and internal environment by processing information taken from one of the five senses.	The cellular structure of all neurons is the same. There are anatomical differences in size depending on their function, e.g. the axons of motor neurons can be very long.
Relay	**Relay neurons** carry messages from one part of the CNS to another. They connect motor and sensory neurons.	
Motor	**Motor neurons** carry signals from the CNS which helps both organs, including glands and muscles, function.	

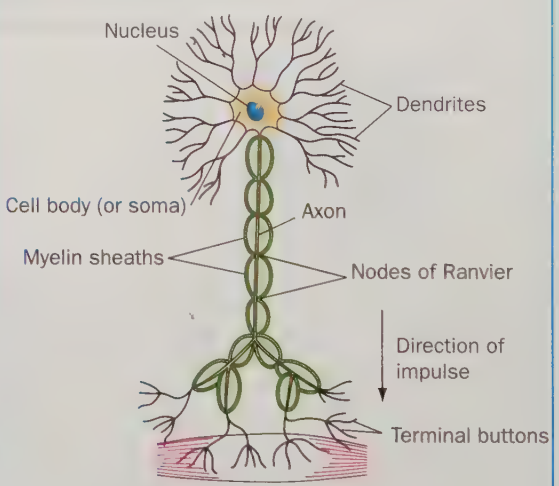


Figure 6.2 The structure of a neuron, showing dendrites, cell body, axon, nucleus, nodes of ranvier and schwann cells

As Table 6.1 states, the structure of the neurons is the same but the components will vary, depending on the role within the nervous system and location in the body.

Figure 6.3 below shows the anatomical differences. Essentially, as sensory neurons only transmit messages, they are known as unipolar neurons. Both motor and relay neurons are multipolar, as they send and receive messages from many sources. This has meant much variation anatomically.

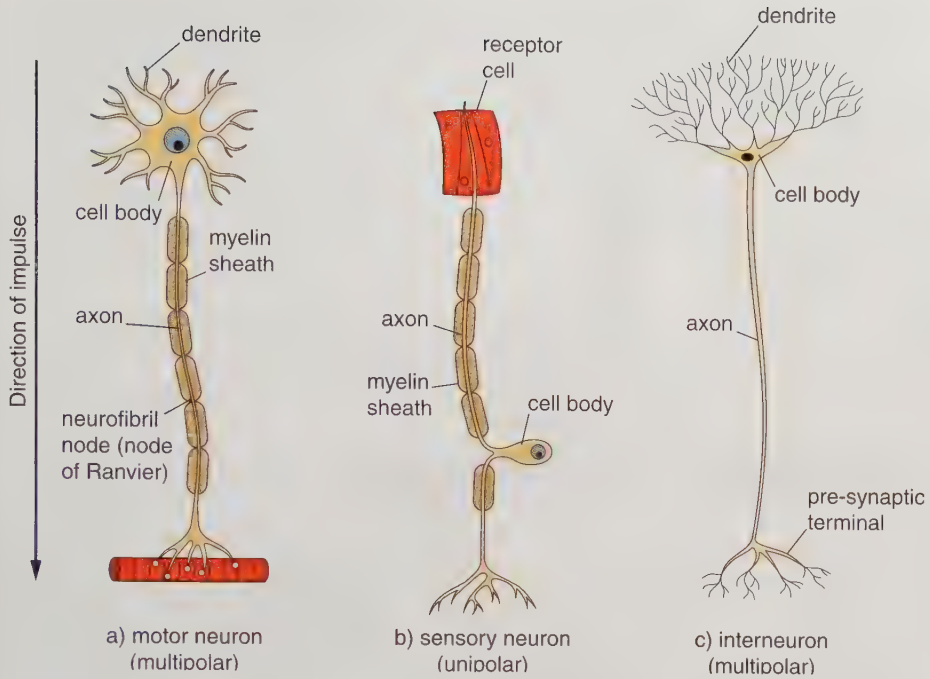


Figure 6.3 The anatomical differences between neurons

In all neurons, the dendrite/receptor cell receives the signal and it then travels through the neuron to the pre-synaptic terminal.

INCREASE YOUR KNOWLEDGE

Santiago Ramón y Cajal (1852–1934)

Cajal was a pioneer in the field of neuroscience and is known for his biological illustrations and work on cell structure and systems.

Cajal had a strict upbringing, often being flogged at school for not paying full attention in Latin class, given just one meal a day and confined in a cell alone.

He wanted to be an artist but his father insisted he study medicine as it was considered to be a more stable profession. His illustrations, however, allowed him to use his drawing skills in his professional life.

He used the technique of using silver salts to stain infant cells and discovered that nerve cells are not actually joined together as first thought. His work has therefore been very influential in understanding the synapse, which is the gap between neurons.

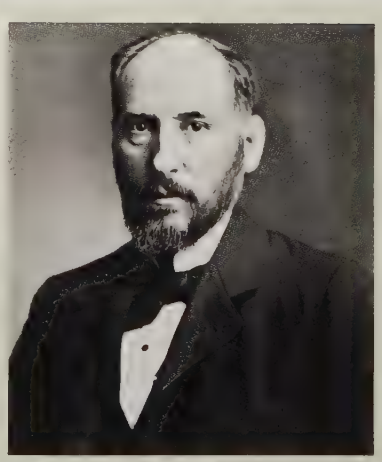


Figure 6.4 Santiago Ramón y Cajal

The process of synaptic transmission

Synaptic transmission is the process for transmitting messages from neuron to neuron. The synapse is a specialised 'gap' between neurons through which the electrical impulse from the neuron is transmitted chemically.

Initially, the electrical nerve impulse travels down the neuron and prompts release of **neurotransmitters** (chemicals in the brain) at the pre-synaptic terminal. These chemicals are then released into the synaptic fluid in the synapse. The adjacent neuron must then quickly take up the neurotransmitters from the fluid and convert them to an electrical impulse to travel down the neuron to the next pre-synaptic terminal. And so the impulse continues to be transmitted on.

KEY TERMS

Synaptic transmission – the process by which electrical nerve impulses are transmitted chemically by neurotransmitters across the synapse between one neuron and another

Neurotransmitters – chemical messengers transmitted in cerebral fluid that convey information between neurons and from neurons to muscles

This occurs at high speed. For example, when processing visual information, most of the information seems to be encoded in the first 50–100 milliseconds of neuronal activity.

ON THE WEB

Searching YouTube for 'Neuron Synapse' will take you to an animation of how the synapse works. It talks you through excitatory and inhibitory synapse. It will also give you a little extra information if you need it.

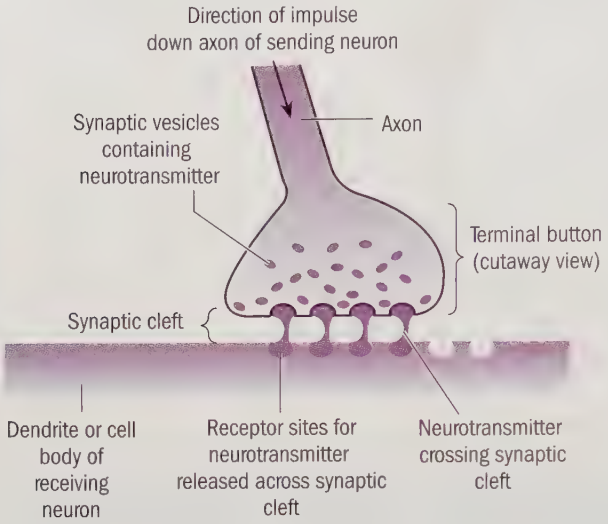

Direction of impulse down axon of sending neuron
Synaptic vesicles containing neurotransmitter
Axon
Terminal button (cutaway view)
Synaptic cleft
Dendrite or cell body of receiving neuron
Receptor sites for neurotransmitter released across synaptic cleft
Neurotransmitter crossing synaptic cleft

Figure 6.5 A typical synapse between two neurons. The nerve impulse travels from the pre-synaptic neuron, across the synaptic cleft, to the post-synaptic neuron

Research

Yamamoto & Kitazawa (2001) examined why we cannot easily perceive when we are touched in two places simultaneously. So, for example, if someone touches you on your shoulder and your toe at exactly the same time it feels as if each is being touched at a slightly different time. Conversely, you sometimes can't tell, if they are touched at a slightly delayed difference in time, which was touched first. This is argued to be because of the inability of the nervous system to transmit that information accurately as the distance from the brain for the neurons receiving the message is different.

Excitation and inhibition

It should be noted, however, that not all messages prompt activation in the same way. It depends on the 'action potential' of the post-synaptic neuron and the message type received.

Only certain neurotransmitters can 'unlock' a message channel in certain receptors in the post-synaptic neuron. It is a kind of lock and key system. When the right key (neurotransmitter) meets the right lock (receptor) a specific ion channel in the membrane is opened up, a bit like a door. Ions then flow through the membrane into the neuron along their specific pathways. This flooding of ions can cause a 'potential' in the dendrites. These potentials can be excitatory or inhibitory.

- Excitatory potentials make it more likely for the neuron to fire and so, if a synapse is more likely to cause the post-synaptic neuron to fire so, it is called an excitatory synapse.
- Inhibitory potentials make it less likely to fire and, if the message is likely to be stopped at the post-synaptic neuron, it is called an inhibitory synapse.

A good analogy to understand the role of **excitation** and **inhibition** is the pedals of a car. An excitatory potential is like the accelerator and an inhibitory potential is like the brake.

KEY TERMS

Excitation – the process by which the potential for post-synaptic nerve impulses to be transmitted is increased

Inhibition – the process by which the potential for post-synaptic nerve impulses to be transmitted is decreased

6.3 The influence of neurochemistry on behaviour: the function of the endocrine system

The **endocrine system** has a series of **glands** which release chemicals (**hormones**) throughout the body via the blood and other bodily fluids. This communicates, much like the neurons do, messages to the organs of the body.

There are specialist glands in the body which form part of this system. Their location in the body is shown in Figure 6.6.

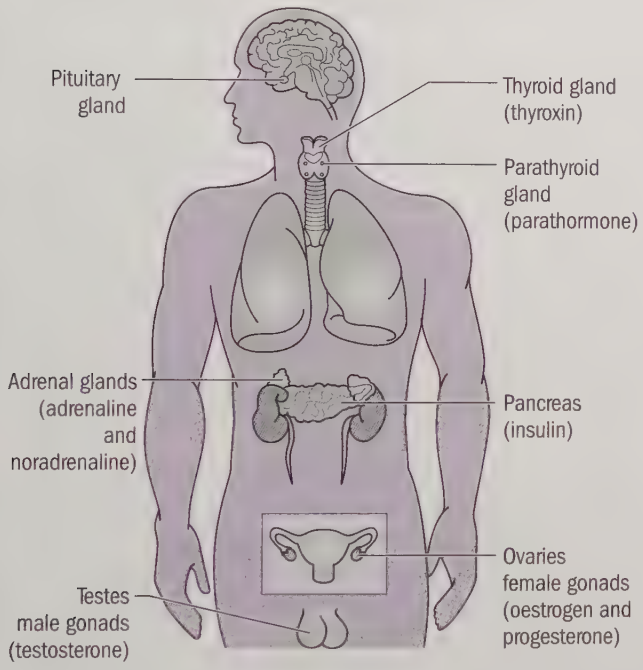


Figure 6.6 The endocrine system, showing the major glands in the human body

The functions of several hormones are shown in Table 6.2 below.

Table 6.2 Functions of some glands and hormones

Gland	Function
Pituitary	Some of the hormones released are important for regulating the endocrine system, hence the nickname 'master gland'
Adrenal	An important part of the fight-or-flight response as it facilitates the release of adrenaline
Testes	They facilitate the release of testosterone (male hormone)
Ovaries	They facilitate the release of oestrogen and progesterone (female hormones)

Behaviour is thought to be influenced by hormones, and each hormone is thought to affect behaviour in a different way.

KEY TERMS

Endocrine system – a bodily messaging system consisting of glands that secrete hormones to regulate bodily functioning

Glands – ductless organs that secrete hormones into the bloodstream

Hormones – chemical messengers transmitted in blood and other bodily fluids that inform the organs and tissues of the body how to function

Research

The hormone oxytocin, released by the pituitary gland, is thought to be particularly important for reproductive behaviour. It is released following orgasm, which aids conception, and elicits a feeling of relaxation and calm. Research by Kosfeld *et al* (2005) also found that high levels of oxytocin encourage strong bonding between couples. This is also the case for mother/child bonding (Feldman *et al*, 2007).

Thus it can be seen that hormonal levels can affect behaviour to some extent.

Another example of a behavioural effect from a hormone, adrenaline, is outlined in the following section.

Kosfeld *et al.* (2005) found that high levels of oxytocin encourage strong bonding between romantic couples, illustrating the importance of the hormone upon reproductive behaviour. This was further supported by Feldman *et al.* (2007), who reported a similar finding for bonding between mothers and infants, which suggests an additional role in promoting attachment bonds.

Money & Ehrardt (1972) found that girls whose mothers took drugs containing testosterone during pregnancy showed more male type behaviours, such as playing sports, and fewer female type behaviours, like playing with dolls, than girls whose mothers did not take testosterone-based drugs. This shows the influence of neurochemistry upon gender behaviour.

Alonso & Rosenfield (2002) found that oestrogen is needed for normal development of body areas and tissues – for instance, the neuroendocrine-gonadal axis, which is associated with puberty in males and females. This shows how the hormone aids development into sexual maturity in both genders, again illustrating the importance of neurochemistry on behaviour.

White-Traut *et al.* (2009) found, when measuring oxytocin levels in saliva produced by females before, during and after breastfeeding, that levels of the hormone were highest just before feeding, decreased dramatically when feeding started and then started to rise again 30 minutes after feeding. This demonstrates the important role of oxytocin in regulating breastfeeding.

McCarty (1981) found blood plasma levels of adrenaline were equal in rats of different ages, before subjecting them to one minute of inescapable electric shocks. After shocking, older rats had lower levels of adrenaline than younger rats, which demonstrates aged-based differences in acute stress responses and which additionally illustrates the role of the hormone in behavioural responses.

Evaluation

- Assessing the extent to which biological structures affect behaviour is difficult. It can be argued that they are merely the 'tools' to make the behaviour happen rather than being the cause. Cause and effect cannot be established in most research because much of the research is correlational. Research on hormones is problematic for this reason. For example, we can say that there is a relationship between increased relationship intensity and oxytocin levels, but not that oxytocin causes the relationship to be more intense. It is equally plausible that a behaviour such as forming a relationship might mean levels of oxytocin increase, rather than the high levels altering the behaviour.
- The idea that biological structures underpin behaviour is reductionist, as it reduces human behaviour and cognitive processes down to biological processes. Within the biological processes, there is then a further reduction down to a specific component, such as the level of a hormone. Many psychologists argue that this is too simplistic.
- Many hormones have more than one effect on behaviour. For example, testosterone is associated with

masculinisation of the male brain during development, as well as with forms of aggressive behaviour. Not only is oxytocin associated with bond formation between carers and infants, but it also has an important role to play in reproductive behaviour, such as initiating contractions in childbirth and facilitating breastfeeding.

Oxytocin has also been implicated in allowing humans to experience empathy and thus understand and share the feelings of others. Individuals with autism often have problems empathising with others and also often have low levels of oxytocin, so there may be a connection with the condition.

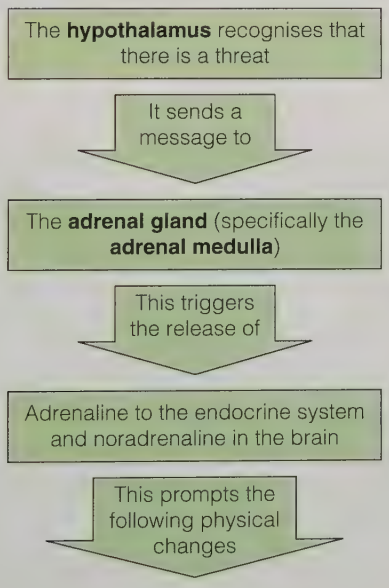
6.4 The fight-or-flight response, including the role of adrenaline

The **fight-or-flight response** is generated from the autonomic nervous system, specifically the sympathetic branch. It is a reflex response designed to help an individual manage physically when under threat. It is also activated in times of acute (short-term) stress as the body perceives such stress to be a threat.

The fight-or-flight response helps an individual to react quicker than normal and facilitates optimal functioning so that they can fight the threat or run away from it.

This occurs in a series of steps:

These physical changes help an individual to fight or run away from the potentially threatening situation.


The **hypothalamus** recognises that there is a threat
It sends a message to
The **adrenal gland** (specifically the **adrenal medulla**)
This triggers the release of
Adrenaline to the endocrine system and noradrenaline in the brain
This prompts the following physical changes

Increased heart rate	To speed up the blood flow to vital organs and improve the spread of adrenaline around the body
Faster breathing rate	To increase oxygen intake
Muscle tension	To improve reaction time and speed
Pupil dilation	To improve vision
The production of sweat	To facilitate temperature regulation
Reduced functioning of the digestive and immune systems	To save energy for prioritised functions, such as running

Figure 6.7 The fight-or-flight response

KEY TERMS

Fight-or-flight response – an innate, unconscious bodily response characterised by increased physiological reaction, which heightens survival chances in response to perceived harmful stressors

Hypothalamus – a part of the brain which is located in the centre of the brain and deals with basic survival functions

Adrenal gland – the gland in the adrenal system that releases adrenaline

Adrenal medulla – the central part of the adrenal gland

Research

Taylor *et al.* (2000) reported that the fight-or-flight response is not universal, as it was found that, although acute stress produces the response in males, it produces a different 'tend-and-befriend' response in females. This occurs as females produce more oxytocin, which promotes nurturing and caring behaviours. This suggests a gender difference in acute stress reactions.

Romero (2010) reported that the location of adrenaline release to initiate the fight-or-flight response differs between species. In mammals, such as humans, it is produced from the adrenal medulla within the adrenal glands. However, in non-mammals who do not possess an adrenal medulla, adrenaline is embedded in the cells within the kidneys. The fight-or-flight response occurs, however, very similarly across species, which supports the idea that it is the production of adrenaline and not its source that is the important factor in initiating the response.

Berger *et al.* (2019) reported that the production of adrenaline, necessary to initiate the fight-or-flight response, is only possible in bony vertebrates, like humans, through the prior stimulation, from the hypothalamus, of osteocalcin, a bone-derived hormone. The researchers found that osteocalcin levels surged in participants when subjected to acute stress, such as speaking in public; this was then followed by other bodily responses associated with the fight-or flight-response. This explains why individuals who produce low levels of adrenaline can still experience the fight-or-flight response. Therefore, production of adrenaline may not be necessary to initiate the response.

Evaluation

- The fact that the hormone osteocalcin is believed to initiate the fight-or-flight response, and is also associated with increasing the ability of cells to utilise glucose and helps animals run faster with greater endurance, suggests that the skeleton evolved to help protect individuals from danger, such as by fleeing efficiently from danger or fighting in response to it.
- The fight-or-flight response occurs automatically in response to perceived danger and, as such, has a biological survival value. This suggests that the response has been shaped through evolutionary forces by means of natural selection. This view is supported by the fact that the response is found throughout animal species.
- The fight-or-flight response increases blood pressure and causes damage to blood vessels, which contributes over time to heart disease. This suggests that continual exposure to acute stress and subsequent triggering of the response can have a negative impact on health.

PSYCHOLOGY IN THE REAL WORLD

A possible clinical use for the calming effects of oxytocin to treat anorexia nervosa – Youl-Ri Kima *et al.* (2014)

A small-scale study in the UK found that when administered with doses of oxytocin, sufferers of anorexia nervosa had a reduction in focus of the fat on their bodies and negative images of food.

Anorexia is a complicated illness, with many differing components to it, but the idea that a hormone which occurs naturally in the body could alleviate some of the suffering, is an interesting development.

Professor Janet Treasure, who led the research, made it clear that the research is in its early stages and that there is no 'oxytocin' treatment available for those with the illness. Work is continuing with a view to developing a possible drug treatment.

STRENGTHEN YOUR LEARNING

1 What is the function of a motor neuron?
2 What is the function of a relay neuron?
3 What is the function of a sensory neuron?
4 What is the job of synaptic transmission?
5 What is the difference between excitation and inhibition in neurons?
6 Adrenaline is released from which gland?
7 Does research support the idea that oxytocin has an effect on behaviour?
8 Explain how the fight-or-flight response occurs.
9 Explain one issue with investigating the role of biological structures on behaviour.
10 What is the difference between the central and peripheral nervous systems?

ASSESSMENT CHECK

1 Explain what the function of a neuron is. **[2 marks]**

2 Outline the process of synaptic transmission. **[4 marks]**

3 Copy and complete the table below by writing which definition A, B, C or D describes which term. One definition will be left over. **[3 marks]**

A This carries signals from the CNS to the muscles and organs.

B This relays information about the environment.

C These are only found in the brain.

D This neuron connects other neurons.

Term	Definition (A, B, C or D)
Sensory neuron	
Motor neuron	
Relay neuron	

4 Using an example, describe the function of the endocrine system. **[4 marks]**

5 Paul does not like rollercoasters. His mouth goes dry, his heart beats fast and he sweats in the queue while waiting for the ride. With reference to the fight-or-flight response, explain why his body reacts this way. **[4 marks]**

6 Discuss the influence of biological structures on behaviour. **[16 marks]**

7 Research on biological structures is argued to be reliable. Briefly explain why the research is described in this way. **[2 marks]**

8 Outline and evaluate the role of biological structures in explaining human behaviour. **[12 marks]**

6.5 Localisation of function in the brain

The human brain has two hemispheres which are bridged by the corpus callosum. This 'bridge', which is a bundle of fibres, is effectively a communication pathway so that the two hemispheres can exchange information.

Mapping the brain for function, that is which bit does what, is an on-going process, but there is now sufficient evidence to know the function of certain parts of the brain.

KEY TERMS

Localisation of function – specific brain areas from which different behavioural functions are operated

Contralateral – when the right hemisphere deals with the left-hand side of the body and vice versa

CLASSIC CASE STUDY

An Odd Kind of Fame: Stories of Phineas Gage – Malcolm Macmillan (2002)

The case study of Phineas Gage

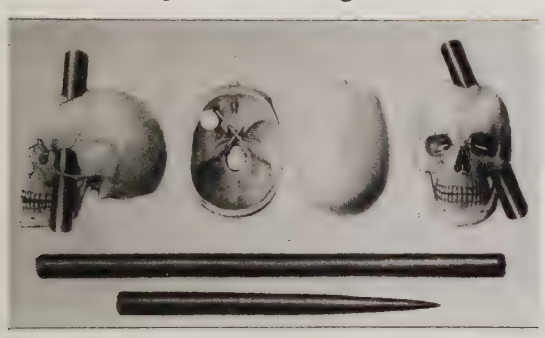


Figure 6.8 The skull of Phineas Gage

Localisation of brain function in the years prior to brain imaging was derived from case studies of people who had suffered brain trauma. One of the most well-known cases was Phineas Gage.

Phineas Gage was a railway worker in the USA, whose job required using dynamite to blast a clear path for railway track construction. He needed to place the dynamite in position and then use a metre-long iron rod with a diameter of one inch (a couple of centimetres) to bed the dynamite in place using sand. The rod was called a tamping iron.

One day, the rod caused a spark and the dynamite blew up, blasting the rod through Phineas' chin and out through the top of his forehead. Immediately after the accident Phineas was conscious and could speak. He was treated by a local doctor but suffered badly over the next few weeks from an infection in the wound.

Eventually he recovered very well physically, with no apparent effect on his functioning other than losing the sight in his left eye. He also obviously had scarring from the injury.

However, psychologically he was a very changed man. Before the accident he was reported to be calm and well-mannered but following the accident he exhibited unreliable, hostile and rude behaviour. He also used vulgar language which he never did prior to the injury.

At that time, there were two schools of thought about the brain. One believed that the brain did not have localisation of function, but that all parts were similar. The other opinion was that it did have localisation. Dr Bigelow from Harvard University subscribed to the first viewpoint, that there was no localisation, and used Phineas' recovery to support that idea. He believed that the rest of the brain had compensated for the damaged part and so therefore the brain was multi-functional throughout. He did, however, largely ignore the personality change.

Conversely, Dr Harlow, the physician who originally treated Gage, believed that there was localisation in the brain and that the area that had been damaged in Gage housed the planning, reasoning and control of the individual. He was proved to be correct in subsequent research into localisation.

(Reference: Macmillan, M. (2002) *An Odd Kind of Fame: Stories of Phineas Gage*. Cambridge, MA: MIT Press)

Hemispheric lateralisation

The brain is **contralateral** (opposite sides) in most people; so parts of the left hemisphere deal with the right side of the body and the right hemisphere does the same for the left side of the body. This means if a person has a stroke in the motor areas of their right hemisphere it will be the left-hand side of the body which is affected by the stroke. It is also the case that what you see in your right visual field is processed by your left hemisphere and although you gather auditory information from both ears, the information from the left ear is dealt with predominantly by the right hemisphere of the brain.

RESEARCH IN FOCUS

1. Give two advantages of using case studies.
2. Give two disadvantages of using case studies.
3. Apart from loss of function, what could account for Phineas' change in behaviour after the accident?

For information on research methods, see Chapter 7.

Taste and smell are also contralateral: taste from your left side of your tongue and smells from your left nostril are processed in the right hemisphere.

Why humans and other vertebrates (and also many invertebrates) are contralateral is not known.

If a function is dealt with by one hemisphere it is said to be lateralised. So the division of functions between the two hemispheres is called **hemispheric lateralisation**. The hemispheres are not symmetrical and this is because the functions of the two differ.

Left hemisphere

For most people their language processing is done in the left hemisphere. Therefore, for many people, if they have a stroke on the left side of their brain, their speech is affected. Areas such as Broca's area and Wernicke's area are found, for most people, on the left side of the brain. This is discussed in more detail later in the chapter (see Language centres, page 266).

Right hemisphere

Recognising emotions

The right hemisphere is particularly dominant in recognising emotions in others.

Spatial relationships

The right hemisphere of the brain has been identified as being involved in the processing of spatial relationships.

Detail and patterns

The left hemisphere has been identified as responsible for focusing on detail within the visual field, while the right hemisphere has been identified as responsible for processing overall patterns in the visual field.

Motor centres

1. Motor cortex

Movement is centred on the primary motor cortex of the brain which sends messages to the muscles via the brain stem and spinal cord. The motor cortex is particularly important for complex movement and not basic actions such as coughing, crying or gagging.

Within the motor cortex there are areas which control specific parts of the body. This is shown in Figure 6.10.

The diagram illustrates the approximate position of the neurons designated to specific areas of the body. Note that there is no relationship between the size of the area of the body and the number of neurons involved. This is due to the complexity of movement in the area dictating how many neurons are needed. For example, although the trunk is a large area of the body, it does not need to complete complex movements, just twisting and bending, so therefore does not need much of the brain to control it.

When the motor cortex instructs an outcome it is the spinal cord and other areas which co-ordinate all the various areas of the body into a movement.

KEY TERMS

Hemispheric lateralisation – concerns the tendency for neural functions and cognitive functions to be specialised to one side of the brain or other

Motor centre – brain area associated with control of complex movements, such as walking

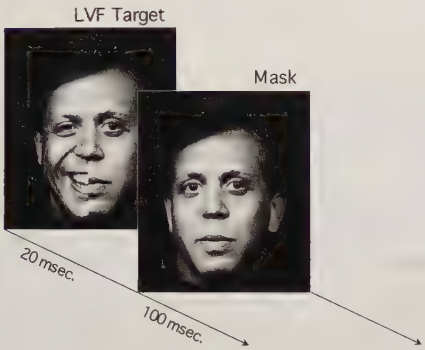


Figure 6.9 An example of the stimuli Narumoto would have used. This image is from Levy, J.,Heller, W., Banich, M. T., Burton, L. A., 'Asymmetgry of perception in free viewing of chimeric faces', 404-419 (1983) *Brain and Cognition* 2/4

There are other areas of the brain which are involved in movement. These are summarised in Table 6.3 below.

Table 6.3 Areas of the brain involved in movement

Spinal cord and brain	Co-ordinate movements
Premotor cortex	Plans a movement prior to executing it
Prefrontal cortex	Stores sensory information prior to a movement and works out the probable outcome of the movement

2. Somatosensory centres

Somatosensory is referring to the sensation of the body. The somatosensory cortex lies next to the motor cortex in the brain. It perceives touch, so the amount of neuronal connections needed dictates the amount of somatosensory cortex needed for that area of the body. It is clear from Figure 6.10 that touch-sensitive areas such as the face require a larger proportion of the somatosensory cortex than say the trunk, which does not require a high level of sensitivity.

3. Visual centres

Primary visual cortex

The brain has two visual cortices, one in each hemisphere.

The primary visual cortex is in the occipital lobe, which is at the back of the brain. This is seen to be the main visual centre. With that centre, it is specifically an area called Area V1 which seems to be necessary for visual perception.

The visual information is transmitted along two pathways, one containing the components of the visual field and the other being involved in the location within the visual field.

Research

Occasionally individuals with damage to Area V1 will show 'blindsight'. This is a condition where someone appears qualitatively blind, in that they report no vision, but they can locate objects in a visual field by pointing at them. This seems to suggest that some of the processing in the visual cortex is not conscious (Bridgeman & Staggs, 1982).

The following contemporary case study illustrates this well.

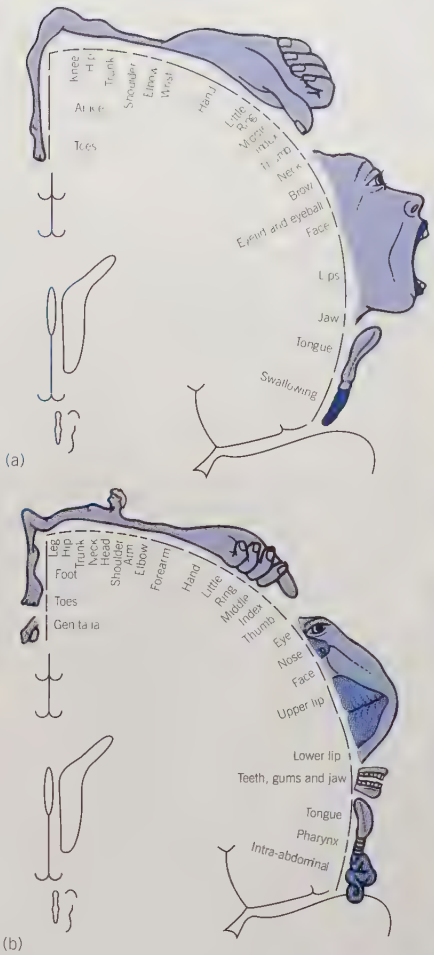


Figure 6.10 Representation of different parts of the human body on the motor cortex (a) and somatosensory cortex. Notice that the face and hands take up more than half of the cortices

KEY TERMS

Somatosensory centre – brain area associated with perception of touch

Visual centre – brain area associated with the perception of visual information

CONTEMPORARY CASE STUDY

Visual experience and blindsight: a methodological review – Overgaard *et al.* (2008)

This case study is about a 31-year-old woman, GR, who experienced the phenomenon called 'blindsight'.

GR had been experiencing headaches over a period of 3 months. These suddenly got worse and she developed blindness in her right visual field. CT scanning showed a haemorrhage in the left occipital lobe.

The brain started to swell more, and a drain was put in to allow the fluid to exit the skull. An operation followed which left her in intensive care. She started to recover function but although she had no injuries to the eyes, the brain was damaged in the visual cortex, which meant she was cortically blind.

Her vision was tested at 3 weeks after the operation. She remained blind a year later.

However, in tests asking her to detect a letter shown on a screen, she could not identify the letter but she did report 'awareness of something', despite *seeing* nothing. This pattern continued with many of the stimuli, and, when tested statistically, there was found to be a significant relationship between awareness of stimuli and accuracy. GR was argued to have blindsight.

This suggests that there may be two types of vision, one conscious and the other unconscious.

4. Auditory centres

Primary auditory cortex

The human brain has two primary auditory cortices, one in each hemisphere.

The primary auditory cortex in both hemispheres receives information from both ears via two pathways that transmit information about what the sound is and its location (in a similar way to how the visual information gets passed to the visual cortex). The information from the right ear goes primarily to the left hemisphere but some is transmitted to the left primary auditory cortex too. This happens in the same way with information from the left ear.

If the primary auditory cortex is damaged it does not lead to total deafness. Sounds can still be heard but if they require complex processing such as music, then this ability is no longer present.

KEY TERMS

Auditory centre – brain area associated with the perception of sound

Language centres – brain areas associated with the production and comprehension of language

Broca's area – brain area associated with the production of speech

Wernicke's area – brain area associated with the comprehension of language

5. Language centres – Broca's and Wernicke's areas

In most people, **Broca's** and **Wernicke's areas** are in the left hemisphere, and that is where most language processing in the majority of the population is situated.

Broca's area

Broca's work (see the classic case study below) therefore correctly identified the area of the brain responsible for speech production.

Not all words are affected equally in this area of the brain. Nouns and verbs seem relatively unaffected in some patients with damage in Broca's area, but other classes of words, such as prepositions and conjunctions, cannot be spoken. For example, people with Broca's aphasia can't read out loud 'To be or not to be' but can say 'Two bee oar knot two bee' (Gardner & Zurif, 1975).

CLASSIC CASE STUDY

'Mysterious 'Monsieur Leborgne': The Mystery of the Famous Patient in the History of Neuropsychology is Explained' – Domanski (2013)

The case study of Leborgne: Broca's area

Louis Victor Leborgne was the son of a schoolteacher in France and suffered with epilepsy throughout his childhood. He worked as a craftsman and was educated. He eventually lost the ability to speak (other than say the word Tan) and was hospitalised at the age of 30. He stayed in hospital until his death in 1861 at the age of 51.

In the hospital he was treated by a neurologist called Paul Broca. Following Leborgne's death, Broca conducted a post-mortem on his brain. He found a lesion (area of damage) on the left temporal lobe. As this was the only visible site of damage he concluded that it was the area responsible for production of speech, based on the deficit Leborgne exhibited.

This is a robust finding and Paul Broca correctly identified the function of that area. The term Broca's aphasia is used today to describe patients with problems producing speech.

Leborgne's brain has also been preserved and kept in the Musée Dupuytren museum in Paris. It has been scanned using modern day technology and, although the damage is more extensive than that documented by Broca, the area identified as responsible for speech production is correctly localised.

Further information on the case can be seen at: Domanski, C.W. (2013) Mysterious 'Monsieur Leborgne': The Mystery of the Famous Patient in the History of Neuropsychology is Explained. *Journal of the History of the Neurosciences*, 22 (1), 47–52 PMID: 23323531.

RESEARCH IN FOCUS

1 What are the disadvantages of using a post-mortem examination (like Broca's research used) to establish brain localisation?
2 What are the advantages of using post-mortem examination in brain localisation research?

For information on research methods, see Chapter 7.

Wernicke's area

This is a separate area of language processing which seems to have a specific function. In 1874, Karl Wernicke, who worked at a hospital in Germany, found that patients who had damage in an area close to the auditory cortex had specific language impairments. These included the inability to comprehend language and anomia, which is when someone struggles to find the word they need. However, Wernicke noticed that these people did have fluent speech, when they could access the words quickly. This led Wernicke to suggest that the area now called Wernicke's area was important for understanding language and accessing words.

Figure 6.11 shows where these two areas are located.

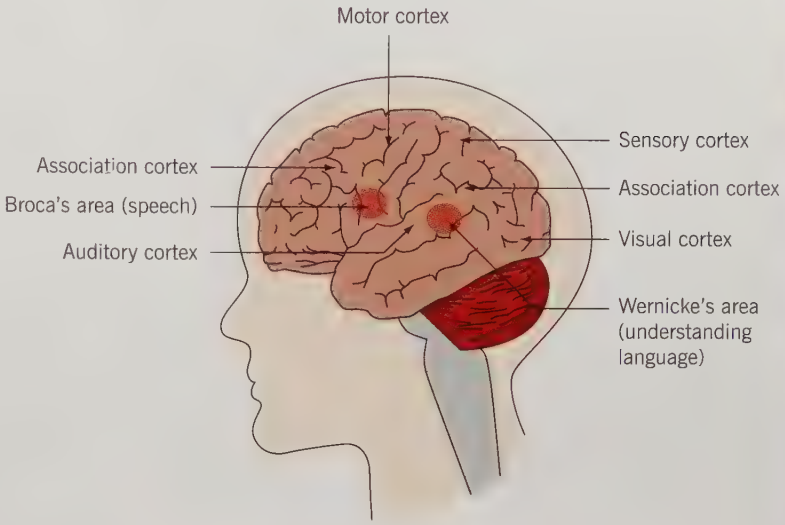


Figure 6.11 Broca's area and other localisation of cortical function

Research

Heller & Levy (1981) found that if a photo of a face that has been split so that one half is smiling and the other is neutral is shown to someone, the emotion displayed in the left-hand side of the picture is the emotion recognised by the participant, which supports the idea of the right hemisphere being dominant in recognising emotions.

Clarke *et al.* (1993) reported on the case study of a female, who after damage to her right hemisphere would often get lost, even in familiar situations, unless she had verbal instructions which contained a distinguishable visual feature to follow, such as 'turn right at the red house with the turret'. This suggests that the right hemisphere deals with spatial information.

Fink *et al.* (1996) found that if participants were asked to look at a picture and identify the small detail there was a greater level of activity in the left hemisphere than if they looked at the picture holistically (all together), which prompted more activity in the right hemisphere. This supported the view that the left hemisphere focuses on detail within the visual field, while the right hemisphere processes overall patterns.

Hurovitz *et al.* (1999) reported that individuals with damage to Area VI within the primary visual cortex report no vision of any kind, whether it be conscious vision or visual imagery while awake or in their dreams. This supports the view that Area VI is necessary for visual perception. However, Bridgeman & Staggs (1982) reported that some individuals with damage to Area VI exhibit 'blindsight', where they appear blind, as they report having

no vision, but can locate objects in a visual field by pointing at them. This seems to suggest that some of the processing in the visual cortex is not conscious.

Meyer *et al.* (2010) found that when people watch silent films their primary auditory cortex in both hemispheres will activate if a door is shut with force, for example, because they are imagining the bang. This suggests that the primary auditory cortex processes auditory images, as well as conscious sounds.

Evaluation

The holistic theory of brain function argues that localisation of function is largely incorrect. Work by Lashley (1950) on rats' brains did not find a specific area involved in memory. It appeared to be stored all over the brain. This would suggest that the idea of specific areas performing specific functions is wrong. However, caution should be used when generalising this to humans, due to physiological differences.

Evidence from case studies of individuals with brain damage seems to indicate there is both localisation and lateralisation of function. If function was spread out throughout the entire brain there would not be specific deficits such as loss of speech function in people that had suffered damage in some way.

It can be argued that the fact that rehabilitation can work following brain injury suggests that there is no localisation or lateralisation. If there were task-specific areas then there would be no brain plasticity (function regained by using other parts of the brain). On page 272 the case study of EB, who had his left hemisphere removed during surgery, yet regained most of his language abilities, would seem to imply that there is no lateralisation and localisation of function (in this case language). However, it could equally be argued that as he never fully recovered function there is some localisation with certain areas of the brain.

Gender differences exist, with females having larger Broca's and Wernicke's areas than males, possibly as a result of women's greater use of language.

Split-brain research

KEY TERM

Split-brain research – studies of the brain involving separation of the hemispheres of the brain, after surgery for severe epilepsy which cannot be controlled by drugs, which allowed assessment of the functional roles of each hemisphere

The corpus callosum, as stated previously (page 263), is the link between the hemispheres. In people who suffer from epilepsy, and are not helped by drug treatment, brain surgery is considered as an option because the epilepsy is generated by a focus area in the brain. By removing that area the epilepsy can be eradicated or reduced. However, in a small number of people with drug-resistant epilepsy, there is more than one focus so the areas cannot be removed. This has led surgeons in the past to cut the corpus callosum so that the epilepsy is contained within one hemisphere of the brain. This has the knock-on effect of reducing the number of fits suffered by the patient as the hemispheres rebounding off each other can prompt seizures.

However, although severing the communication between the hemispheres can reduce the effect epilepsy has on someone, there are effects on their behaviour and perception. These 'split-brain' patients can also tell us to some extent about the role of each hemisphere.

Research

Work by Roger Sperry and colleagues (Nebes, 1974) documented the effects on the functioning of these individuals. Their findings are as follows.

- Certain unfamiliar functions such as stringing beads onto a piece of thread cannot be performed, yet very familiar actions such as tying shoelaces can still be done.
- In the first few weeks after surgery the hemispheres act separately, making the person feel like two people in one body (Dimond, 1979). The left hemisphere takes control of situations and suppresses interference from the

right hemisphere by using smaller pathways that connect the hemispheres. It is an adaptive process.

- In some patients the hemispheres co-operate with each other. For example, if a colour is shown to the left visual field then the right hemisphere can see it, but the left cannot articulate the colour. As the left hemisphere is responsible for speech, when the person is asked what the colour is the left hemisphere will guess, as it cannot see it. The right hemisphere knows the answer, but cannot speak, so indicates that the answer is wrong by prompting a frown.
- Some patients compensate for the lack of connectivity of the two hemispheres by using strategies such as turning their heads so both hemispheres can take in the environment.

Work conducted has helped understand the function of the hemispheres and how they communicate. However, although there were successes in this line of work the fact that there are two functioning hemispheres has caused issues with competition between parts of the brain in some patients. This was particularly pronounced in the case study of Karen Byrne (see below).

IN THE NEWS

Ψ The Psychological Enquirer

On the other hand

The case study of Karen Byrne was covered in some detail by the BBC film, *Broken Brains*. Clips for the film regarding this case study can be seen via the link below:

www.bbc.co.uk/news/uk-12225163

Karen suffered from epilepsy and at the age of 27, the decision was taken to operate and cut the connection between the two hemispheres by severing the corpus callosum. On waking up from the operation, it became apparent that Karen's left hand functioned separately from the rest of her body.

In the film she is quoted as saying:

'Dr O'Connor said "Karen, what are you doing? Your hand's undressing you." Until he said that, I had no idea that my left hand was opening up the buttons of my shirt. So I started rebuttoning with the right hand and, as soon as I stopped, the left hand started unbuttoning them. So he put an emergency call through to one of the other doctors and said, "Mike, you've got to get here right away, we've got a problem."

I'd light a cigarette, balance it on an ashtray, and then my left hand would reach forward and stub it out. It would take things out of my handbag and I wouldn't realise so I would walk away. I lost a lot of things before I realised what was going on.'

Karen's left hand was out of control. She has been diagnosed as having Alien Hand Syndrome.

Figure 6.12 Alien Hand Syndrome means the hand functions separately from the rest of the body

This is a rare condition which does not always occur when the corpus callosum is cut in surgery. This was a very unfortunate effect for Karen Byrne.

What this example illustrates is the way that the brain is separated into the two hemispheres. It also shows how movement on each side of the body is lateralised into the two hemispheres. The split-brain patients on the whole managed to ensure their two hemispheres acted in a relatively cohesive way and their limbs acted in a co-ordinated way. This clearly was not the case for Karen Byrne.

As explained, Alien Hand Syndrome does not always occur following brain surgery; in fact, it is very unusual indeed.

Evaluation

Split-brain research has been useful in understanding the role of each hemisphere and the extent to which they are lateralised.

It is problematic to assume that evidence is not flawed. The extent to which the split brains were indicative of normal functioning prior to surgery is an issue, especially as the surgery was to treat a problem within the brain. It is also possible that there were other effects during surgery, in addition to the procedure itself.

Split-brain patients are rare and such patients often have other neurological problems which may act as confounding variables in research. Additionally, surgery doesn't always completely separate the two hemispheres. These considerations mean that generalising findings is difficult.

Plasticity and functional recovery of the brain after trauma

'I tell people whom I want to inform about brain injury to imagine their brain as a dartboard... having speech, thinking, intellect, walking, planning, memory, etc... for areas to be hit. Then close your eyes, grab a random number of darts and throw them at it! The result may be in one area, many areas, a few...who knows?'

Brian Weir, brain injury survivor (1963)

There is no doubt that damage to the brain can be life-changing, and the extent to which it affects an individual depends on many factors including the extent of the trauma and the subsequent care. Almost all people who suffer damage to the brain can make some recovery. New branches of axons and dendrites need to grow within neurons but in some instances the brain adapts to the trauma and finds another way to complete a function. Recovery is not always complete and depends on the level and type of the damage.

Plasticity

Plasticity is the ability to replace the function lost by anatomical damage. A cell body can never be replaced, but axons, in some cases, can.

There are three main anatomical ways that the body can replace axon function in the brain after trauma:

Increased brain stimulation

As neurons are damaged there is an effect on the neighbouring neurons as they no longer have input. This happens with the hemispheres too. Although damage may only be on one side, the other hemisphere functions at a lower level too, as it has reduced input.

Axon sprouting

When an axon is damaged its connection with a neighbouring neuron is lost. In some cases, other axons that already connect with that neuron will sprout extra connections to the neuron, replacing the ones that have been destroyed. It is compensating for the loss of a neighbour. This occurs for the most part two weeks after the damage happens. It helps replace function, but only if the damaged axon and the compensatory axons do a similar job. If not, problems can occur with function.

KEY TERMS

Plasticity – the ability of the brain to replace function lost by physical damage to the brain

Functional recovery – the ability of the brain to transfer functions from a damaged area of the brain to other undamaged areas

IN THE NEWS

Ψ The Psychological Enquirer

Does heading footballs cause brain damage?

There is currently debate in football as to whether children should be prevented from heading footballs due to the potential for brain damage.

In March 2014, the Football Association apologised to the widow of West Bromwich Albion and England striker Jeff Astle for their lack of communication with the family following his death in 2002 at the age of 59.

Jeff Astle was the first footballer to be certified as dead due to brain injury from heading footballs during his career. It was originally thought that he had died from Alzheimer's but a neurosurgeon's report twelve years later ruled that the cause of death was 'boxer's brain', a condition brought about by repeated damage to the head. The heavy leather footballs used whilst Jeff Astle was a professional player are thought to be the reason there was so much damage experienced.

The Football Association will be conducting research into this potential problem.

Some neuroscientists are calling for a ban on heading footballs for all children as they are most at risk of damage. Their brains are very vulnerable to damage due to them still developing and their neck muscles are not strong enough to withstand extra pressure.

The FA released guidelines and rules for treatment of concussed players. They have also recommended baseline testing of players' cognitive faculties annually, similar to the testing conducted in American Football and rugby union. This will allow any potential decline in brain function to be picked up.

This level of damage is less likely to occur in footballers nowadays due to the change in the footballs currently used. However, the example does illustrate that prolonged, low-level damage to the brain has far-reaching effects, and that it is not just occasional accidents to the head that can cause lasting damage.

A 2019 study by Stewart reports that footballers are five times more likely than the general population to die of Alzheimer's disease. This has prompted a call for an investigation into a possible link between heading footballs and dementia.

Figure 6.13 Are headers putting footballers at risk of brain damage?

Denervation supersensitivity

This occurs when axons that do a similar job become aroused to a higher level to compensate for the ones that are lost. However, it can have the unfortunate consequence of over-sensitivity to messages such as pain. This increases the pain levels in an individual.

Functional recovery of the brain after trauma

Much recovery after trauma is due to anatomical compensation, brought about by intensive rehabilitation. The brain learns to compensate for function. The brain can be taught to learn how to use the working faculties and function to compensate for the ones that are lost forever (see the contemporary case study below).

CONTEMPORARY CASE STUDY

Is a lone right hemisphere enough? – Laura Danelli *et al.* (2013)

The boy who learned to speak again after losing his left brain hemisphere

EB, an Italian boy, was operated on at the age of $2\frac{1}{2}$ years to remove a large benign tumour from his left hemisphere. Due to the size of the tumour virtually all of his left hemisphere was removed, and, at that time, all of his linguistic abilities disappeared too. He was right handed and it seems that his language localisation was in his left hemisphere (this is the case with 95 per cent of right-handed people).

He underwent an intensive rehabilitation programme and his language abilities started to improve around the age of 5. They continued to do so over the next three years to the point that no problems of language ability were reported.

Danelli *et al.* (2014) tested him further at the age of 17 to compare his language abilities with 'normal' controls. They found that his right hemisphere had compensated for the loss of the left hemisphere in that he was functioning linguistically well. However, they did find some areas which were not at the expected standard. There were some minor grammatical problems and he was slower at naming objects in pictures.

This led the researchers to conclude that the right hemisphere had compensated following the intensive programme, but that it was never able to compensate fully. When scanning EB's brain, the brain activity was practically identical to the activity in 'normal' controls. This shows (in this case study at least) that hemispheric lateralisation can be compensated for to at least a basic degree by the non-specialist hemisphere.

There should be a degree of caution used in reading too much into case studies, but this example does show that the brain is able to adapt to profound injury, at least in early childhood.

Factors affecting recovery of the brain after trauma

Perseverance

Functional recovery after brain trauma is dependent on assessment and perseverance. Sometimes a function may appear to be lost but that may be because the individual affected may not be trying and takes the view that it is unrecoverable.

Physical exhaustion, stress and alcohol consumption

When function is recovered in an individual it is important to remember that often the function is used with considerable effort and although the person can do a task, they are often fatigued by the effort. It is similar to walking through deep mud rather than on a tarmac road surface. Other factors such as stress and alcohol consumption can affect the ability to use any function that has been regained (Fleet & Heilman, 1986).

Age

There is a deterioration of the brain in old age and this therefore affects the extent and speed of recovery. The contemporary case study of Danelli *et al.* (2013) (above) illustrates the extent to which a young brain can regain function following severe damage.

Gender

There is research to suggest that women recover better from brain injury as their function is not as lateralised (concentrated in one hemisphere).

CONTEMPORARY RESEARCH

Higher education associated with better recovery from traumatic brain injury – Schneider *et al.* (2014)

Aim

Schneider *et al.* investigated whether time spent in education would be a factor in recovery from brain injury.

Procedure

769 people who had suffered head injuries from road traffic accidents and falls were studied. They had all been treated in the emergency room in the hospital and followed a programme of rehabilitation. Their progress was monitored.

Findings

1 Of the 769 participants, 24 per cent did not finish school, 51 per cent had 12 to 15 years of education and 25 per cent had graduated from university, with an undergraduate degree or a higher level of qualification.
2 One year after the injury, 28 per cent of the participants had made a full recovery and were back in education or working.
3 39 per cent of the graduates were left free of disability, whereas of those who had left school early, only 10 per cent made a full recovery.
4 The researchers are not sure why these results arose but argue it may be that more educated people make more effective use of their brains, which strengthens them.
5 They found that similar injuries had very different outcomes, and that one of the factors implicated in successful outcomes was the amount of time spent in education. Schneider suggests that people with an increased cognitive capability might heal in a different way to those who have a low capability – it may be that some people have a greater ability to compensate for function. They are seven times more likely to make a full recovery than people who did not finish school.

Conclusion

People who have remained in education for longer have a greater 'cognitive reserve', which means they are less likely to be left permanently disabled after a head injury. Their brains are better able to maintain function in spite of damage, which makes them more likely to regain function following a brain trauma.

Evaluation

The large sample size for this study means that it shows a general trend in recovery levels overall. However, there are many other factors that could be implicated in the recovery levels and so suggesting it is due to education level is problematic.

Research

Takatsuru *et al.* (2009) demonstrated that if, following brain injury, the undamaged hemisphere is stimulated, recovery from a stroke can be improved. This highlights the plasticity of the brain in recovering from trauma.

Taub & Berman (1968) found that when a monkey has a 'deafferented' limb (the limb has lost its sensory input), it will not try to use it. However, if the functioning of other limbs becomes damaged, then it has no option other than to use the deafferented one. The motor nerves are still connected to the limb, but because the sensory nerve connection is damaged the monkey does not feel as though it can move the limb. This demonstrates the importance of perseverance in functional recovery.

Fleet & Heilman (1986) reported that, when function is recovered after brain trauma, the effort of using that function is very fatiguing and the ability to use the function can be negatively affected by stress and consuming alcohol. This highlights the fragility of recovered function.

Marquez de la Plata *et al.* (2008) found that, following brain trauma, older patients (40+ years old) regained less function in treatment than younger patients and they were also more likely to decline in terms of function for the five years following the trauma. This illustrates how age is a factor in the extent and speed of recovery from brain trauma.

Ratcliffe *et al.* (2007) assessed the level of recovery in cognitive skills in 325 patients receiving rehabilitation aged 16–45 years at the time of brain injury. Female patients performed significantly better than men on tests of attention/working memory and language, whereas males outperformed females in visual analytic skills. Overall, the results suggest a better recovery for women, illustrating the effect of gender on functional recovery following trauma.

Evaluation

Research has shown that recovery is possible following trauma. There is evidence to show that rehabilitation programmes work successfully.

In some cases there is no record of functioning level prior to the trauma, so it is difficult to know the extent to which the brain has recovered to pre-trauma levels.

The ability of the brain to recover varies according to the extent of the damage, the location of the damage, and the individual. For this reason, each case varies vastly and generalisations are difficult to make.

STRENGTHEN YOUR LEARNING

1 What is the function of the motor cortex?
2 What is the function of the somatosensory cortex?
3 What is meant by hemispheric lateralisation?
4 What is meant by brain localisation?
5 What is the difference in function between Broca's and Wernicke's areas of the brain?
6 Where is the brain split in split-brain research?
7 How does split-brain research add to our understanding of the brain?
8 Explain the meaning of brain plasticity.
9 What factors determine the level of recovery of the brain following trauma?
10 What are the limitations of investigating recovery of the brain after trauma?

ASSESSMENT CHECK

1 Explain what hemispheric lateralisation is. **[2 marks]**

2 Outline and evaluate split-brain research. **[16 marks]**

3 Copy and complete the table below by inserting which definition A, B, C or D best describes which term. There will be one definition left over. **[3 marks]**

A Area of the brain which deals with what you hear

B Area of the brain implicated in speech production

C Area of the brain implicated in understanding language

D Area of the brain that co-ordinates movement

Term	Definition (A, B, C or D)
Motor cortex	
Wernicke's area	
Broca's area	

4 Briefly describe two findings from split-brain research. **[4 marks]**

5 Joanne is amateur boxer and has sustained a severe blow to her head during a fight. She was knocked unconscious and suffered concussion and some damage to her brain. Discuss two factors that will affect her chances of a full recovery. **[4 marks]**

6 Researchers investigating recovery rates from brain trauma concluded that men recovered at a slower rate than women, because they spent longer in rehabilitation units. The sample for the study was six men and seven women who volunteered for the study.

Explain, by reference to sampling, why the researchers' conclusions may not be valid. **[4 marks]**

6.6 Ways of studying the brain

Functional magnetic resonance imaging (fMRI)

KEY TERMS

Ways of studying the brain – methods of research available to psychologists in order to assess the functions of the brain

Functional resonance imaging (fMRI) – a brain scanning technique using a magnetic field and radio signals to monitor blood flow in the brain in order to produce a dynamic (moving) image of brain activity

Scanning techniques – the various methods by which images of brain function can be produced

Functional **fMRIs** operate in the same way as standard MRIs but can also show activity as it occurs. MRIs work by recording the energy produced by molecules of water, after a magnetic field is removed. The fMRI uses the same principle, but instead of measuring the energy emitted from water, it measures the energy released by haemoglobin (the protein content of blood). When haemoglobin has oxygen it reacts differently to when it is without oxygen. So, when an area of the brain is active and is therefore using more oxygen, the difference in the amount of energy released by the haemoglobin is detected by the scanner and the change measured. This gives a dynamic (moving) picture. It shows activity about one second after it occurs. It is also accurate to within 1–2 mm in the brain.

Research

D'Esposito *et al.* (1995) used fMRI scanning to show that the prefrontal cortex was activated when verbal and spatial tasks were performed simultaneously, but not when performed separately. This illustrates the importance of the technique in identifying the brain area as being involved with the central executive in the operation of working memory.

Beevers *et al.* (2010) found, using fMRI scans, that individuals with depression often have difficulty in activating brain areas associated with cognitive control of emotional information. This showcases the value of fMRI scanning in achieving a greater understanding of the mental disorder, which may lead to more effective treatments.

Gallese (2001) used fMRI scanning to identify the anterior cingulate cortex and inferior frontal cortex as being involved with experiencing the emotions of others. The use of fMRI scans has thus given support to the existence of mirror-neurons, nerve cells that allow individuals to empathise with the emotional experience of others.

Evaluation

- fMRI provides a moving picture of brain activity. This means that patterns of activity can be compared rather than just the physiology of the brain. The dynamic nature of brain activity is important and so the fMRI is particularly useful for this.
- The complexity of brain activity means that interpreting an fMRI scan is problematic. It is a difficult task, made more difficult by the time delay of the scan.
- fMRI machines are expensive to buy and maintain and they require trained operators. This makes research expensive and difficult to organise.
- The sample sizes in studies are often small due to limited availability and funding. The cost per participant is high. This makes results difficult to generalise from.

ON THE WEB

In a programme called *Alan Alda: Brains on Trial* there is a lot of coverage on how brains are studied. The programme is available on YouTube and has been divided up into sections. One section covers how fMRIs work.

You can access the clip by searching YouTube for 'How does fMRI brain scanning work? Alan Alda and Dr. Nancy Kanwisher, MIT'.

INCREASE YOUR KNOWLEDGE

fMRIs are just one method of scanning the brain that is used in research. However, there are other methods available. These methods are also used to gather data for research.

- **CAT scan:** The full name for this method is 'computerised axial tomography', and the technique uses an X-ray beam to produce a picture of the physiology of the brain. The picture is not moving, but can pick up lesions (damage) and unusual brain physiology.
- **PET scans:** the full name for this method is 'positron emission tomography'. It produces a moving picture of brain activity using radioactive glucose which has been injected into the bloodstream. The scanner picks up where in the brain the most glucose is being consumed, as this indicates which areas are the most active. The scan pictures look rather like heat sensor pictures, with red indicating high activity and blue/green showing little activity.
- **MRI scans:** These are magnetic resonance imaging, which use the same technology as fMRIs, but are unable to produce a moving picture.

The availability and cost of these methods dictate which are used for diagnosis and research.

Electroencephalogram (EEG) and event-related potentials (ERPs)

For an **EEG**, electrodes are placed on the scalp and they record the electrical activity of the brain. There can be anything from two to three electrodes to over a hundred. Electrodes measure the activity of the cells immediately under the electrode, so using more electrodes gives a fuller picture.

ERPs use the same apparatus as EEGs, but record when there is activity in response to a specific stimulus introduced by the researcher.

Research

Dement & Kleitman (1957) (see page 283) used EEGs to identify, from brain waves, the different stages of sleep, illustrating the vital role the technique played in allowing researchers to investigate brain functioning during sleep.

Costa *et al.* (2003) reported that males admitted feeling aroused by nude female pictures, but females claimed they were not aroused by nude male pictures. However, ERPs showed arousal in both genders when exposed to opposite-sex nude pictures, which illustrates that ERPs have greater accuracy than self-reports.

Evaluation

- Both methods are only reasonably accurate for activity measured close to the electrode. This means that the finer detail is missed so this type of method is only suitable for certain research questions.
- EEGs and ERPs are cheaper methods than scanning so they are more widely available to researchers.
- The output from the equipment needs to be interpreted so there is a level of expertise required if a researcher decides to use these methods.
- ERPs are a useful method to test the reliability of self-report answers. They are a useful supplementary method for research, particularly when the area of research is potentially sensitive and open to social desirability bias.

KEY TERMS

Electroencephalogram (EEG) – a method of measuring brain activity using electrodes on the scalp

Event-related potentials (ERPs) – a method of measuring brain activity in response to a stimulus (using the same equipment as EEG)

Post-mortem examinations – a method of study involving dissection of an individual's brain after their death

Post-mortem examinations

Post-mortem examinations are when a person's body, including the brain, is examined after they have died. They can be used to see where damage had occurred in the brain and how that might explain behaviour exhibited by the individual prior to death.

Research

Domanski (2013) (see page 266) reported how neurologist Paul Broca performed a post-mortem on a patient to find that an area of the left temporal lobe, now known as Broca's area, is responsible for the production of speech. This illustrates how post-mortems can be used to identify the roles that different brain areas play.

Iversen (1979) performed post-mortems on schizophrenic patients, to find they had excess dopamine in their limbic systems. This helped give support to the view that irregular dopamine functioning is implicated in the causation of schizophrenia.

Reeves & Plum (1969) conducted a post-mortem upon an obese female, finding that her ventro-medial hypothalamus brain area had been destroyed. This provided support for the viewpoint that neural factors are involved in obesity.

Evaluation

The research is conducted on a dead person so there is no brain activity measured.

There are issues with comparison of functioning prior to death. It may be that there is little information about how the person managed before they died.

Some brains may have been affected by the reason for the death (for example, disease).

There is no discomfort experienced by the individual as they are not alive.

STRENGTHEN YOUR LEARNING

1 How does fMRI work?
2 Outline one strength of using fMRI technology.
3 Outline one weakness of using fMRI technology.
4 How do electroencephalograms (EEGs) work?
5 How do event-related potentials (ERPs) work?
6 Explain the limitations of using EEGs.
7 Explain the strengths of using ERPs.
8 What is a post-mortem examination?
9 Explain the limitations of using post-mortem examinations for investigating the brain.
10 What is the difference between EEGs and ERPs?

6.7 Biological rhythms

'Our biological rhythms are the symphony of the cosmos, music embedded deep within us to which we dance, even when we can't name the tune.'

Deepak Chopra (2004)

Circadian rhythms

Circadian rhythms are **biological rhythms** lasting a day (approximately 24 hours). An example is the sleep/wake cycle, which is usually measured by recording the times of regular events like when we eat and go to sleep. Our body clock is regulated by an internal system including such factors as release of hormones like melatonin, metabolic rate and body temperature.

Research

Siffre (1975) peformed a case study of himself when he spent six months in a cave with no natural light or cues as to the day or time. When he woke up he had artificial light to help him navigate within the cave and keep himself busy. His internal body clock was allowed to free-run and it settled into a sleep/wake cycle of between 25 and 30 hours. He lost track of how many days he had been in the cave, believing it to be one month less than he had actually stayed in. He was in the cave for a total of 179 days. This suggests that natural light sources in the environment are vital for keeping the individual to a 24-hour cycle.

Aschoff & Weber (1962) studied participants living in a bunker that had only electric light and no windows. The participants were allowed to turn lights on and off as they wished, so that the light source fitted with their body clocks. Eventually their body clocks settled into a sleep/wake cycle of 25 to 27 hours. This seems to suggest, like Siffre (1975), that we use natural light sources to entrain (or 'adjust') our pacemakers (see below) with the environment and that the 24-hour clock is thus not in line with our natural bodily rhythms.

Folkard *et al.* (1985) withdrew participants from natural light sources for three weeks, and changed the time cues to only 22 hours a day without the participants being aware this occurred. Only one participant out of twelve could not adjust to the shortened day. This shows that our natural circadian rhythm is flexible and can differ between individuals.

KEY TERMS

Biological rhythms – bodily cycles that occur over varying amounts of time

Circadian rhythms – biological rhythms that occur every 24 hours

Figure 6.14 Siffre during his time in the cave

The effect of endogenous pacemakers and exogenous zeitgebers on the sleep/wake cycle

Endogenous pacemakers

Endogenous pacemakers are rhythms that are generated from internal bodily systems. They can also be affected by the environment. Research shows that the endogenous pacemakers still function without the cues from the environment, although the circadian rhythm can vary as a consequence (see research on circadian rhythms, above).

The suprachiasmatic nucleus (SCN) seems to be the most influential endogenous pacemaker in the body. It is in the centre of the brain and is regulated by light from the environment. It is believed to act as our internal body clock.

KEY TERMS

Endogenous pacemakers – internal body mechanisms that assist in the regulation of biological rhythms

Exogenous zeitgebers – external environmental cues that affect the regulation of biological rhythms

The SCN is found in animals and this has therefore facilitated research examining its role. It also means that the extent to which the SCN is influential in regulating biological rhythms can be examined. This would be difficult and unethical to do with humans.

Research

Ralph *et al.* (1990) removed the SCN out of genetically abnormal hamsters which only had a circadian cycle of 20 hours. They then transplanted the SCN cells into hamsters which had no such abnormality and functioned on the normal 24-hour cycle. Following the transplant the circadian rhythm of the hamsters shortened to 20 hours. This suggests that the SCN is pivotal in regulating the internal body clock.

Morgan (1995) found that, when the SCN from normally functioning hamsters was removed, their circadian rhythms disappeared. However, a reversal was possible as when SCN cells were transplanted back in, the rhythm returned. This further supports Ralph *et al.*'s findings that the SCN is a central factor in the internal body clock.

Exogenous zeitgebers

Exogenous zeitgebers are cues from the environment that play an important role in regulating time and hence the circadian rhythm in humans. They combine with endogenous pacemakers to help regulate the body clock so that the individual is synchronised with the environment. Sunlight is an example of a zeitgeber, as are noise, the seasons and the moon.

Entrainment is where there is an adjustment of the body clock in line with the environment. This happens when a traveller crosses time zones as their pacemakers are not synchronised with the environment anymore. Zeitgebers therefore act as cues, allowing a person to adjust.

Research

Campbell & Murphy (1998) monitored the body temperatures of fifteen volunteers who slept in a laboratory. They were woken at different times and a light pad was shone on the back of their knees. Their circadian rhythms were disrupted by up to three hours. This shows that it is not necessary for light to just enter the eyes to have a physiological effect on the biological rhythms.

Shih-Yu Lee *et al.* (2013) found that light therapy can help mothers of premature or low birth weight babies who are in intensive care. As the environment has low lighting, mothers find that their sleep is disrupted. To compensate for this, fifteen women were given bright light therapy over three weeks and their sleep was monitored. Women receiving the therapy reported an improvement in sleep quality in comparison to a control group. This shows the effect on sleep quality that zeitgebers can have and also the practical applications of the research.

Steel *et al.* (2008) investigated the effects of constant daylight on circadian rhythms by monitoring six participants living in isolation in the Arctic for six weeks. There was constant daylight throughout that time. The participants kept sleep logs. The researchers found that five of the six participants developed a free-running sleep/wake cycle longer than 24 hours. However, they also found that the sleep patterns were individual and there were no synchronised patterns that emerged. This means that social cues may not have a strong effect in the absence of other zeitgebers.

PSYCHOLOGY IN THE REAL WORLD

Chronotherapeutics

The use of light therapy as a clinical treatment for depression is now recognised as an effective and affordable intervention for affective disorders (disorders that affect mood). It can be used as the sole treatment or with drug treatment to maximise success.

Benedetti *et al.* (2007) conducted a study examining the effects of light therapy and sleep deprivation in patients suffering from bipolar disorder. They found that the use of chronotherapeutics reduced two-thirds of the patients' depression inventory score by 50 per cent.

This shows a clear practical implication for research on biological rhythms.

Figure 6.15 Chronotherapeutic lights can help people with depression

Evaluation

- Much of the research can be criticised for lacking external validity. It is often carried out in artificial conditions and therefore the resulting behaviour could be argued to be similarly false.

  Monitoring sleep can also have an effect on the sleep patterns of the participant. This means that the sleep patterns recorded could be a by-product of being monitored rather than the effect of the zeitgeber/pacemaker.
- Using animals in research also raises concerns regarding extrapolation. There are clearly physiological differences which may in turn make generalising to humans problematic.
- Research can be used to develop interventions to help the clinical population. (See Benedetti *et al.* (2007) in Psychology in the real world, above.)

ON THE WEB

It is argued that the body clock of some individuals means they are more alert in the morning and this type of people are called larks. Conversely, there are owls who function at their best in the evening. The neurogeneticist Dr Louis Ptacek argues this is genetic.

There are tests available to determine whether you function as an evening owl or a morning lark. Try searching using the terms 'body clock test'.

When do you think you function better?

Infradian rhythms

KEY TERM

Infradian rhythms – biological rhythms that occur less than once a day

Infradian rhythms last more than 24 hours. An example is the menstrual cycle, which is dictated by the endocrine system. However, this rhythm is not imposed purely by the release of hormones. It is suggested that zeitgebers such as light and odours are also involved. Another example of an infradian rhythm is hibernation, which is an annual rhythm observed in certain animals.

Research

McClintock & Stern (1998) found that when women received 'odourless compounds' from the armpits of women in the latter half of their menstrual cycle, their menstrual cycle was shortened, presumably by the effect of the other women's pheromones as they approached the end of their cycle. The compounds were transferred by the women rubbing a pad, which had previously been wiped across the donor's armpit, above their upper lip. However, if the compounds (which included pheromones) were collected from women at the beginning of their cycle, this had the opposite effect, lengthening the cycle of those who had received the compound. This suggests that the menstrual cycle of a woman can be altered by communication via pheromon.

Reinberg (1967) reported the case study of a woman who spent three months in a cave with only the light of a small lamp. Her days lengthened to 24.9 hours and her menstrual cycle shortened to 25.7 days. This suggests that the levels of light in the cave affected her menstrual cycle. It then took her body a year to readjust her menstrual cycle. This research shows how infradian biological rhythms can be influenced by external zeitgebers such as light.

Evaluation

- The effects of pheromones can help explain menstrual synchronicity, whereby groups of women who live together, such as nuns, have menstrual cycles that can become synchronised with each other. The idea of communication via pheromones can neatly explain this phenomenon as there must be something in the shared environment that acts as a zeitgeber.
- It is suggested that there is an evolutionary advantage if this occurs, as it means there could potentially be synchronised pregnancies and that means that childcare could be shared when the babies are born at or around the same time.
- How close women have to live together and for what period of time, for menstrual synchronisation to occur, is not clear. The extent to which pheromones can have an effect still requires research.
- Wilson (1992) re-examined data to challenge the idea of menstrual synchronicity, stating that experimental evidence of its existence was exaggerated, as results from experiments fell within chance factors and were thus not statistically significant.

Ultradian rhythms

KEY TERMS

Ultradian rhythms – biological rhythms that occur more than once a day

Sleep/wake cycle – the daily pattern of wakefulness and sleep experienced by individuals

Ultradian rhythms are biological rhythms lasting less than 24 hours, like stages of sleep within the **sleep/wake cycle**. Sleep has five stages that occur through the night. These stages occur throughout one's lifespan but vary in length depending on age. The cycle lengthens with age to about 90 minutes.

The stages within the sleep/wake cycle vary in terms of length of time, brain activity and physiological effects. These are summarised in Table 6.4 below:

Table 6.4 The sleep/wake cycle

Stage	Length	Brain activity	Physiological effects
One	The length in each stage varies between 5 and 15 minutes.	Less than relaxed wakefulness, but higher than other stages (apart from REM).	Heart rate slows and muscles relax. People are still easily woken at this stage.
Two		Sleep spindles (short bursts of activity) occur on EEG outputs in this stage.	The body continues to relax. It is still easy to wake someone from this stage.
Three		There are less sleep spindles in this stage. EEG outputs show slow delta waves.	The body relaxes still further and people become harder to wake in this stage.
Four	40 minutes.	Delta waves, which are a specific type of brain wave, increase and the level of activity is slower than all other stages.	Metabolic rate, which is the rate food is digested, is low. People are difficult to wake. Growth hormones are released.
REM (rapid eye movement)	15 minutes initially, lengthening throughout the night (with less time spent in other stages).	More brain activity than in any other sleep stage.	Complete relaxation of the trunk. Irregular breathing and heart rate. Probability of dreams.

Over the course of about 90 minutes, a sleeper goes through stages 1–4 and then returns to stage 3, and then stage 2, before going into REM sleep. The sleep cycle then starts again. The number of sleep cycles depends on how long an individual sleeps for. There can be about five full cycles in a full night's sleep.

CLASSIC RESEARCH

The relation of eye movements during sleep – William Dement & Nathaniel Kleitman (1957)

This is a classic study as this work was the first to document what occurs in REM sleep and offer insight into what happens during our sleeping hours.

Aim

To investigate brain activity change throughout night-time sleep.

Procedure

1 Seven adult males and two adult females were the participants.
2 Participants were asked to report to the laboratory at bedtime where they were connected to an EEG. The EEG took measurements throughout their time asleep, all night. Participants were asked not to drink caffeinated drinks for the day before their sleep was investigated.

Findings

1 Dement & Kleitman found that everyone had periods of REM every night.
2 They also found high incidences of dream recall when participants were awakened during REM periods of sleep. If awakened in the other stages, very few reported dreaming. Participants were woken between 5 and 15 minutes into the start of REM sleep.
3 When looking for a relationship between brain activity and dreams, Dement & Kleitman found that the brain activity of very vivid dreams was different to the less clear dreams.
4 They also found that the rapid eye movements of the participants during REM sleep varied according to the dream type and mirrored their rapid eye movements while awake and completing a similar task to the one they had dreamt about. For example, one participant exhibited vertical rapid eye movements during his dream. When awoken and asked about the content he reported dreaming about climbing a series of ladders and looking up and down while he climbed.

This showed that Dement & Kleitman had identified the stage of the sleep cycle in which most dreams occur.

Evaluation

The research by Dement & Kleitman is seen as reliable as there has been much replication of their findings since 1957.

The manner in which data was collected could have caused an atypical reaction from participants and the frequency of occurrence of REM sleep might be different in a non-experimental setting. This would also apply to all subsequent research.

Figure 6.16 Electrodes used to measure brain activity during sleep in research settings

Dreaming is difficult to measure as it is experienced in a state of consciousness where communication is very difficult if not impossible.

Using an EEG is an objective measure and is therefore scientific, so has increased validity.

Conclusion

From the research it can be concluded that the stages of sleep follow a typical pattern throughout the night, and that dreams mostly occur in REM sleep.

Research

Albers *et al.* (1981) found that lesions to the SCN in primates led to gradual decay of behaviours controlled by circadian rhythms, but not those controlled by ultradian rhythms, which suggests that circadian and ultradian rhythms have different controlling mechanisms.

Van der Veen & Gerkema (2017) used a statistical technique called non-spectral analysis to find 60 genes associated with ultradian rhythmic activity. This suggests that ultradian rhythms are controlled by biological, internal factors, rather than environmentally determined ones.

Dement & Kleitman's (1957) findings have stood the test of time. However, some studies have found that 70 per cent of participants report dreams during NREM sleep. Foulkes (1967) attributed this to vague, dream-like experiences or muddled thoughts being incorrectly categorised as dreams.

Evaluation

A lot of the research into ultradian rhythms involved animals, creating generalising problems to humans.

The development of EEG readings gave psychologists an objective means of studying sleep behaviour.

Until Van der Veen & Gerkema's 2017 study, it had been thought that ultradian rhythms were externally generated by environmental factors, as no biological mechanisms for their production had been identified. However, it now seems that ultradian rhythms might actually be internally generated and under biological control after all.

STRENGTHEN YOUR LEARNING

1. What is the function of the SCN?
2. Define what a circadian rhythm is.
3. What is meant by an infradian rhythm? Give an example.
4. What is meant by REM sleep?
5. What is the difference in function between an infradian and an ultradian biological rhythm?
6. How many sleep stages are there?
7. What are the problems with using an EEG to measure sleep patterns?
8. Explain the meaning of the term endogenous pacemakers and give an example of one.
9. Explain the meaning of the term exogenous zeitgebers and give an example of one.
10. Give an example of a practical application of research into biological rhythms.

ASSESSMENT CHECK

1 Explain the difference between ultradian and infradian rhythms. **[2 marks]**

2 Outline and evaluate research into circadian rhythms. **[16 marks]**

3 Copy and complete the table below by inserting which definition A, B, C or D best describes which term. One definition will be left over. **[3 marks]**

A Measures the electrical activity of the brain

B Investigates brains following death

C Measures the change in energy released by haemoglobin

D Measures changes in activity in the brain following presentation of a stimulus

Term	Definition (A, B, C or D)
Functional magnetic resonance imaging (fMRI)	
Event-related potentials (ERPs)	
Electroencephalograms (EEGs)	

4 State two endogenous pacemakers. **[2 marks]**

5 Discuss two issues with using post-mortem examinations to localise function in the brain. **[4 marks]**

6 Researchers decided to compare the brain activity of elderly (over 70 years old) individuals during sleep with the activity of young adults (between 11 and 25 years old). They used EEG measurements for the comparison.

Explain why the data gathered may lack reliability and validity. **[4 marks]**

The divisions of the nervous system

The structure and function of neurons

The process of synaptic transmission

The function of the endocrine system

The fight or flight response

Localisation of function in the brain and hemispheric lateralisation

Plasticity and functional recovery of the brain after trauma

Ways of studying the brain

Biological rhythms

SUMMARY

- The nervous system is divided into the central nervous system (CNS) and the peripheral nervous System (PNS).
- The CNS consists of the brain and spinal cord, and the PNS is made up of the nervous system of the rest of the body.
- There are three types of neuron: sensory (which transmit information from the senses), relay (which transmit messages) and motor (which help organs and muscles to function).
- The synapse is the gap between neurons. Messages are transmitted chemically across the synapse at high speed.
- Some neurons have potentials that are excitatory (increase the chance of firing) and some are inhibitory (decrease the chance of firing).
- The endocrine system transmits messages around the body using hormones.
- The fight-or-flight response (generated from the autonomic nervous system) helps an individual prepare for quick reaction to a potentially threatening situation.
- The brain has two hemispheres which are connected using the corpus callosum. There are some differences between the roles played by each hemisphere.
- For most people, the left hemisphere deals with language processing, whereas the right hemisphere is dominant while processing faces. The left hemisphere seems to focus on detail, whereas the right hemisphere looks at things holistically.
- The motor cortex is responsible for movement and is next to the somatosensory cortex, whose role is perceiving sensation in the body.
- The visual centres of the brain are mostly in the occipital lobe at the back of the brain, whereas the auditory centres of the brain are in the temporal lobes.
- The two language areas are Broca's area, which deals with speech production, and Wernicke's area, which focuses on understanding.
- Split-brain research has been useful in furthering our understanding of the role of the two hemispheres.
- Plasticity is the ability of the brain to recover function after brain trauma. This can be done by regeneration and compensation via intensive rehabilitation.
- Factors affecting recovery of the brain after trauma include: perseverance, exhaustion, stress, alcohol consumption, age and gender. The location and extent of the damage are also very important.
- The brain can be studied using scanning techniques such as fMRI, EEGs and ERPs. Post-mortem examination can also be carried out.
- There are three types of biological rhythm: circadian (these last 24 hours), infradian (these last more than 24 hours) and ultradian (these last less than 24 hours).
- Circadian rhythms are influenced by endogenous pacemakers (such as the suprachiasmatic nucleus, known as the SCN) and exogenous zeitgebers (such as light and sound).
- An example of a circadian rhythm is the sleep/wake cycle. An infradian rhythm is the menstrual cycle, and an ultradian rhythm is the stages of sleep.

7 Research methods

Introduction

Research methods are the means by which theories are constructed and tested. There are many types of research methods, each with strengths and weaknesses. Specific focus will be upon:

- Research methods (experimental and non-experimental)
- Scientific processes
- Data analysis.

Understanding the specification

- For research methods, you need to understand *experimental and various non-experimental methods.*
- For scientific processes, you need to understand *the processes involved in designing and carrying out investigations.* This includes ethical considerations and the reporting of investigations.
- For data analysis, you need to be able to *analyse and present data,* including both descriptive and inferential analysis.

These are the basic requirements of the specification. However, other relevant material is included in this chapter to provide depth and detail to your understanding.

IN THE NEWS

Ψ The Psychological Enquirer

The war against the birds

Figure 7.1 A starving Chinese child in the great famine of 1958–61, a disaster caused partly by a lack of scientifically conducted research

In 1958, Chinese leader Mao Zedong made the observation that sparrows always seemed to be feasting on the rice fields. He estimated that each sparrow ate 4.5 kilos of rice a year, so for every 1 million sparrows that could be killed there would be food for 60,000 people. He therefore announced that all citizens were to participate in a campaign to kill the sparrows, so that food production could be increased and famine avoided. On December 13th The Shanghai Newspaper reported on the start of the 'total war' against the birds; of the waving flags and scarecrows, the whistles and gongs to keep the birds airborne, the poisoning and shooting of sparrows, the destruction of their nests and eggs. Hundreds of millions of sparrows were killed and the bird became nearly extinct. Yet as early as April 1960 it was realised with horror that what the birds had mainly been snacking on were the locust grubs that attacked the rice crop. Without the sparrows the grubs literally had a field day, swarms of locusts rampaged unchecked, and between 1958 and 1961, a period known in China as 'the great famine', it is estimated that up to 60 million people starved to death.

This is an example of the negative consequences that can occur when practical applications are based on flawed evidence. Mao Zedong's intentions were good, but if he had subjected his beliefs to proper scientific research, this disaster would never have happened. Practical applications that truly benefit society should be based upon objective, unbiased research that is capable of being replicated and which has been subjected to peer review to check its credentials. In this chapter we look at the many ways in which psychologists can conduct research, the individual strengths and weaknesses of each, and the techniques that can be employed, so that research is carried out in a responsible manner.

Figure 7.2 Like a golfer selects the best club to play a shot, psychologists select the most appropriate research method to conduct a study

7.1 Research methods

'Equipped with his five senses, man explores the universe around him and calls the adventure science.'
Edwin Powell Hubble (1929)

'Men love to wonder and that is the seed of science.'
Ralph Waldo Emerson (1860)

There are several **research methods** in psychology. Like a golfer selecting the most appropriate club, psychologists choose the most appropriate method for research. No single method is perfect; each has strengths and weaknesses.

The experimental method

The **experimental method** is a scientific method involving the manipulation of variables to determine cause and effect. A variable is any object, characteristic or event that varies in some way. Participants are randomly allocated (without bias) to the different testing groups, so that the groups should be fairly similar. All procedures in an experiment should be standardised (kept the same for all participants).

In an experiment a researcher manipulates an **independent variable (IV)** to see its effect on a **dependent variable (DV)**. For example, caffeine consumption (IV) could be manipulated to see its effect on reaction time (DV).

Operationalisation

Variables must be operationalised; this means clearly defining them so they can be manipulated (IV) and measured (DV). Some variables are more difficult to operationalise, for instance, anger levels. Another problem is that **operationalisation of variables** leads to only one aspect of a variable being measured. However, without accurate operationalisation, results will be unreliable and could not be replicated to check their validity.

Extraneous and confounding variables

Extraneous variables (other variables that could affect the DV) are controlled so that they do not vary across any of the experimental conditions or between participants. Uncontrolled extraneous variables can become **confounding variables** and 'confuse' the results by affecting the DV. For example, if researchers wished to investigate the effect of background music (Condition 1) or silence (Condition 2) on homework performance using two classes, they would have to control a number of extraneous variables, including age, homework difficulty, etc. If these were all controlled, the results would be trustworthy. However, if the participants in Condition 1 were brighter than those in Condition 2, intelligence would be a confounding variable. The researchers could not then be sure whether differences in homework performance were due to the presence of the music or intelligence. Results would be confounded and worthless.

There are three main types of extraneous variables:

1. **Participant variables** – concern factors such as participants' age and intelligence.
2. **Situational variables** – concern the experimental setting and surrounding environment, for example temperature and noise levels.
3. **Experimenter variables** – concern changes in the personality, appearance and conduct of the researcher. For example, female researchers may gain different results from male ones.

Demand characteristics

Conducting research involves interaction between researchers and participants and such interactions can affect research findings.

There are several features of research studies that enable participants to guess what a study is about and what is expected of them. Such **demand characteristics** can involve participants:

- guessing the purpose of the research and trying to please the researcher by giving the 'right' results
- guessing the purpose of the research and trying to annoy the researcher by giving the wrong results; this is called the 'screw you effect'
- acting unnaturally out of nervousness or fear of evaluation
- acting unnaturally due to social desirability bias (see page 296).

The single-blind procedure is a technique that reduces demand characteristics. It involves participants having no idea which condition of a study they are in.

KEY TERMS

Research methods – the means by which explanations are tested

Experimental method – a research method using random allocation of participants and the manipulation of variables to determine cause and effect

Independent variable (IV) – the factor manipulated by researchers in an investigation

Dependent variable (DV) – the factor measured by researchers in an investigation

Operationalisation of variables – the process of defining variables into measurable factors

Extraneous variables – variables other than the IV that might affect the DV

Confounding variables – uncontrolled extraneous variables that negatively affect results

Demand characteristics – features of a piece of research which allow the participants to work out its aim and/or hypotheses. Participants may then change their behaviour and so frustrate the aim of the research

KEY TERM

Investigator effects – a research effect where researcher features influence participants' responses

Figure 7.3 The physical appearance of an investigator can unconsciously affect the behaviour of participants in studies

In drug trials, for example, they would not know whether they were being given a real drug or a placebo drug (sugar pill).

Investigator effects

Investigator effects are the ways in which researchers unconsciously influence the results of research and can occur in several ways:

- Physical characteristics of investigators may influence results, such as age or ethnicity. For example, male participants may be unwilling to admit sexist views to female researchers.
- Less obvious personal characteristics of investigators, like accent or tone of voice, can influence results. For example, participants may respond differently to someone with a stern voice.
- Investigators may be unconsciously biased in their interpretation of data and find what they expect to find.

The double-blind procedure is a technique to reduce investigator effects, which involves neither participants nor investigators knowing which condition participants are in. They are both 'blind' to this knowledge. This prevents investigators from unconsciously giving participants clues as to which condition they are in and therefore reduces demand characteristics. For example, in drug trials, the drug and placebo would be allocated in such a way that neither the participant nor the researcher would know who was receiving which.

STRENGTHEN YOUR LEARNING

1 Describe the experimental method in terms of:
   (i) manipulation of variables
   (ii) random allocation
   (iii) operationalisation
   (iv) extraneous and confounding variables.
2 What are:
   (i) demand characteristics
   (ii) investigator effects?
3 How can the risk of demand characteristics and investigator effects be reduced?

Types of experiment

Laboratory experiments

KEY TERM

Laboratory experiment – experiment conducted in a controlled environment allowing the establishment of causality

Laboratory experiments, for example Baddeley's (1966) study of encoding in memory (see page 55), are performed in a controlled environment, using standardised procedure, with participants randomly allocated to experimental groups.

Advantages of laboratory experiments

- **High degree of control** – experimenters control all variables and the IV and DV are precisely operationalised (defined) and measured, leading to greater accuracy and objectivity.
- **Replication** – other researchers can repeat the experiment to check results.
- **Cause and effect** – as all other variables are controlled, the effect (change in the value of the DV) must be caused solely by the manipulation of the IV.

- **Isolation of variables** – in the laboratory, individual pieces of behaviour can be isolated and rigorously tested.

Weaknesses of laboratory experiments

- **Experimenter bias** – experimenters' expectations can affect results and participants may be influenced by these expectations.
- **Problems operationalising the IV and DV** – to gain precision measurements can become too specific and not relate to wider behaviour, for example, defining 'getting fatter' as putting on two pounds per week.
- **Low external (ecological) validity** – high degrees of control make experimental situations artificial and unlike real life. Therefore, it can be difficult to generalise results to other settings. Laboratory settings can be intimidating places so people may not act normally.
- **Demand characteristics** – participants are aware they're being tested and so may unconsciously alter their behaviour.

RESEARCH IN FOCUS

Have a look at Baddeley's (1966) laboratory experiment into coding in memory (page 55).

1. Can you identify the IV and the DV?
2. What aspects of this study make it a laboratory experiment?
3. What are the advantages and weaknesses of conducting this study as a laboratory experiment?

Field experiments

Field experiments, for example Bickman's (1974) study of obedience (see page 30), occur in 'real world' settings rather than the laboratory, with participants often not knowing they're in a study. The IV is manipulated by the experimenter and as many other variables as possible are controlled.

YOU ARE THE RESEARCHER

Construct a field experiment that looks at whether people are more willing to help females or males when asked to change a 20p piece for two 10p pieces.

Why would this be a field experiment rather than a laboratory or natural/quasi experiment? What would be your IV and DV? What type of sample would you be using? Compose a suitable null hypothesis (see page 301) for your study.

KEY TERMS

Field experiment – experiment conducted in a naturalistic environment where the researchers manipulate the independent variable

Natural experiment – experiment where the independent variable varies naturally

Quasi experiment – where the researcher is unable to freely manipulate the independent variable or randomly allocate the participants to the different conditions

Natural and quasi experiments

In **natural experiments** the IV varies naturally; the experimenter does not manipulate it, but records the effect on the DV. For example, Costello *et al.* (2003) were studying the mental health of Native Americans on a reservation. During the study a casino opened, giving an opportunity to study the effect of decreasing poverty on mental health, with an IV of the amount of money in the reservation before and after the casino opened. In **quasi experiments** the IV occurs naturally, such as in a study of gender where males and females are compared. Natural and quasi experiments are often used when it is unethical to manipulate an IV. In such studies random allocation of participants is not possible.

Advantages of field and natural experiments

- **High ecological validity** – due to the 'real world' environment, results relate to everyday behaviour and can be generalised to other settings.
- **No demand characteristics** – often participants are unaware of the experiment, and so there are no demand characteristics.

Weaknesses of field and natural experiments

- **Less control** – it is more difficult to control extraneous variables, so causality is harder to establish.
- **Replication** – since the conditions are never exactly the same again, it is difficult to exactly repeat field and natural experiments to check the results.
- **Ethics** – when participants are not aware that they are in an experiment it incurs a lack of informed consent. This applies more to field experiments, since in natural/quasi experiments the IV occurs naturally and is not manipulated by the experimenter.
- **Sample bias** – since participants are not randomly allocated to groups, samples may not be comparable to each other.

YOU ARE THE RESEARCHER

Design a quasi experiment that assesses whether children who regularly attend day care are more aggressive than children who are raised at home.

Why would this be a quasi rather than a field or laboratory experiment? What would the IV and DV be? Refer to the section on inferential testing (page 331) to work out what type of statistical test you would need. What advantages and limitations would there be compared to a laboratory study?

Observational techniques

Observations involve watching and recording behaviour, for example children in a playground. Most observations are naturalistic (occur in real-world settings), but can occur under **controlled** conditions, for example Milgram's (1963) obedience study (see page 18).

There are two main types of observation:

1. **Participant observation** involves observers becoming actively involved in the situation being studied to gain a more 'hands-on' perspective, for example Zimbardo's (1971) prison simulation study (see page 13).
2. **Non-participant observation** involves researchers not become actively involved in the behaviour being studied, for example Ainsworth's (1971) Strange Situation study (see page 120).

Observations can also be:

- **overt** – where participants are aware they are being observed, for example Zimbardo's (1971) prison simulation study (see page 13).
- **covert** – where participants remain unaware of being observed, for example Festinger's (1957) study where he infiltrated a cult who were prophesying the end of the world to observe what happened when it didn't.

KEY TERMS

Controlled observations – surveillance and recording of events occurring under controlled conditions, such as Mary Ainsworth's Strange Situation

Participant observations – surveillance of events where the observer takes part in the activity being observed

Non-participant observations – surveillance of events where the observer takes no part in the activity being observed

Overt observations – surveillance of events where participants are aware of being observed

Covert observations – surveillance of events where participants are unaware of being observed

Advantages of observational techniques

- **High external validity** – since observations usually occur in natural settings, participants behave naturally and so results can be generalised to other settings (though not in overt or controlled observations, as participants are aware of being observed).
- **Practical method** – can be used in situations where deliberate manipulation of variables would be unethical or impractical, for example studying football hooliganism. It is useful where co-operation from those being observed is unlikely and where the full social context for behaviour is needed. It is particularly useful when studying animals or children.
- **Few demand characteristics** – with covert observations participants are unaware of being observed and so there are no demand characteristics.

Weaknesses of observational techniques

- **Cause and effect** – causality cannot be inferred, since the variables are only observed, not manipulated, and there is little control of extraneous variables.
- **Observer bias** – observers may see what they want to see, though this can be reduced by establishing inter-observer reliability (see page 294).
- **Replication** – the lack of control over variables means conditions can never be repeated exactly to check the results.
- **Ethics** – if participants are unaware of being observed, issues of invasion of privacy and informed consent arise (though if participants are informed of the study, then there is a possibility of demand characteristics).
- **Practical problems** – it can be difficult to remain unobserved and there can be problems recording behaviour, for example seeing all behaviours exhibited. It can also be difficult to categorise observed behaviours accurately.

Figure 7.4 Observational studies usually involve observing behaviour in real-world settings, for example observations of football hooliganism

Observational design

There are several ways in which data can be gathered in **naturalistic observations**, including visual recordings like videos and photographs, audio recordings, or 'on-the-spot' note-taking using agreed rating scales or coding categories. The development of effective behavioural coding categories is integral to the success of observational studies.

Behavioural categories

Observers agree on a grid or coding sheet on which to record the behaviour being studied. The **behavioural categories** chosen should reflect what is being studied. For example, if observers are interested in the effect of age and sex on the speed of car driving, they might want to develop behavioural categories like those given in Table 7.1.

Rather than writing descriptions of behaviour observed, it is easier to code or rate behaviour using previously agreed scales. Coding can involve numbers (like age of driver) or letters to describe characteristics (like M = male) or observed behaviours (like T = talking). Observed behaviour can also be rated on structured scales, like 1–5 on a scale of 'safe driving'.

KEY TERMS

Naturalistic observations – surveillance and recording of naturally occurring events

Behavioural categories – dividing target behaviours into subsets of behaviours through use of coding systems

Table 7.1 Behavioural categories of driving behaviour

Driver	Sex (M/F)	Age (estimate)	Number of passengers	Observed behaviour	Type of car	Speed (estimate in km per hour)	Safe driving rating 1 = very unsafe 5 = very safe
A	M	55	0	M-P	Ford	40	2
B	F	21	2	T	VW	30	5
C	F	39	3	D	BMW	50	3
D etc.	M	70	0	C	Jensen	60	5

Observed behaviour code

D = Distracted **M-P** = Using mobile phone

T = Talking **C** = Concentrating

Sampling procedures

In observational studies it is difficult to observe all behaviour, especially as it's usually continuous. Breaking behaviour down into categories helps, but decisions must also be made about what type of sampling procedure (methods of recording data) to use.

- **Event sampling** – counting the number of times a behaviour occurs in a target individual or individuals.
- **Time sampling** – counting behaviour in a set time frame, for example recording what behaviour is being exhibited every 30 seconds.

Inter-observer reliability

Inter-observer reliability occurs when independent observers code behaviour in the same way (for example, two observers both agree on a score of '3' for safe driving) and lessens the chances of observer bias, where an observer sees and records behaviour in a subjective way (i.e. sees what they want to see). Inter-observer reliability needs to be established before an observation begins and it is easier to achieve if behavioural categories are clearly defined and do not overlap with each other.

KEY TERMS

Event sampling – an observational sampling method where the number of times a target behaviour occurs is recorded

Time sampling – an observational sampling method where all behaviour observed in a specific time frame is recorded

Inter-observer reliability – where observers consistently code behaviour in the same way

RESEARCH IN FOCUS

A 2004 NICHD (National Institute of Child Health and Human Development) study found that children with the longest number of hours in day care had the lowest levels of aggression, suggesting that day care has a positive effect on aggression levels. But an earlier NICHD study found the opposite, using observations made by mothers rather than those made by teachers and carers.

1 Why might these similar studies into the effects of hours of day care on aggression levels, which both used observational techniques, have found such different results?

2 The establishment of inter-rater (or observer) reliability could have created clearer results.

Explain what inter-rater reliability is and how it would be established in these studies.

YOU ARE THE RESEARCHER

1. Design and carry out an observation in your school/college cafeteria to assess gender differences in healthy eating. Behavioural categories will need to be established, e.g. healthy/unhealthy food items, as well as ratings of food items.

   How would you:
   (i) determine inter-observer reliability
   (ii) analyse and present the data?
2. How could you incorporate time and/or event sampling into your study? How long would you conduct the observation for?

Self-report techniques

Self-report techniques are research methods in which participants give information about themselves without researcher interference.

KEY TERMS

Self-report techniques – participants giving information about themselves without researcher interference

Questionnaires – self-report method where participants record their own answers to a pre-set list of questions

Questionnaires

With **questionnaires**, respondents record answers to a pre-set list of questions, usually concerning behaviour, opinions and attitudes – for example, Adorno's (1950) F-scale questionnaire (see page 30). Two main types of question are asked:

1 **Closed (fixed) questions** – involve yes/no answers (for example, do you believe in UFOs? 'yes' or 'no') or a range of fixed responses (for example, do you eat meat 'always', 'usually', 'sometimes', 'never'?). Such answers are easy to quantify, but restrict participants' answers.

2 **Open questions** – allow participants to answer in their own words. They are more difficult to analyse, but allow freedom of expression and greater depth of answers. For example, what kinds of music do you like and why?

Advantages of questionnaires

- **Quick** – compared to other methods, large amounts of information can be gathered in a short period. Postal questionnaires can gain relatively large samples for the cost of a stamp while online questionnaires are cost-free.
- **Lack of investigator effects** – questionnaires can be completed without researchers present.
- **Quantitative and qualitative analysis** – closed questions are easy to analyse statistically, while open questions provide richer, fuller detail.
- **Replication** – as questionnaires use standardised questions (the same for everyone), they are easy to replicate. This is particularly true of questionnaires using closed questions.

Weaknesses of questionnaires

- **Misunderstanding** – participants may misinterpret questions. (For example, what is meant by do you 'usually' do your homework?) There can also be problems with technical terms, emotive language and leading questions.
- **Biased samples** – questionnaires are suitable for people who are willing and able to spend time completing them. Certain types of people may be more willing to fill in questionnaires and not be representative of the whole population.

- **Low response rates** – questionnaires are an uneconomical research method as they can get very low return rates.
- **Superficial issues** – questionnaires, particularly those using closed questions, are not suitable for sensitive issues requiring detailed understanding.
- **Social desirability/idealised answers** – participants may lie in order to give answers expected of them (for example, not revealing racist beliefs) or may give answers that reflect how they would like to be, rather than how they actually are.

Questionnaire construction

There are several important considerations in designing questionnaires that people will actually complete and provide useful data to.

- **Aims** – having an exact aim helps, as it is then easier to write questions that address the aim.
- **Length** – questionnaires should be short and to the point, as the longer the questionnaire, the more likely people will not complete it.
- **Previous questionnaires** – use examples of questionnaires that were previously successful, as a basis for the questionnaire design.
- **Question formation** – questions should be concise, unambiguous and easily understood.
- **Pilot study** – questionnaires should be tested on people who can provide detailed and honest feedback on all aspects of the design of the questionnaire.
- **Measurement scales** – some questionnaires use measurement scales to assess psychological characteristics or attitudes. These involve statements on which participants rate levels of agreement or disagreement. See an example below.

Rate your level of agreement with the following statement:

'Vigorous regular exercise is good for your health.'

1	2	3	4	5
Strongly agree	Agree	Undecided	Disagree	Strongly disagree

There are usually a number of statements on a particular topic and the answers to these statements are combined to create a single score of attitude strength. However, it is not easy for participants to judge answers, so many choose the middle score. When this happens it is impossible to know whether they have no opinion or cannot decide between their attitudes in both directions. The best known of these attitude scales is the Likert scale (as in the example above).

YOU ARE THE RESEARCHER

1. Compose three open and three closed questions for a questionnaire examining people's smoking habits and attitudes to smoking.

   What type of data would:
   (i) the open questions generate
   (ii) the closed questions generate?
2. Explain how:
   (i) social desirability bias could affect the answers given
   (ii) idealised answers could affect the answers given.

Interviews

Interviews involve researchers asking face-to-face questions, for example Bowlby's (1944) study of maternal deprivation in juvenile thieves (page 134). There are three main types: structured, unstructured and semi-structured.

1 **Structured** – involves identical closed questions being read to participants, with the interviewer writing down answers. Interviewers do not need much training, as such interviews are easy to conduct.

2 **Unstructured** – involves an informal discussion on a particular topic. Interviewers can explore interesting answers by asking follow-up questions. Interviewers need considerable training and skill to conduct such interviews.

3 **Semi-structured** – involves combining structured and unstructured techniques, producing quantitative and qualitative data.

Advantages of interviews

- **Complex issues** – complicated or sensitive issues can be dealt with in face-to-face interviews by making participants feel relaxed and able to talk. This is particularly true of unstructured interviews.
- **Ease misunderstandings** – any misunderstood questions can be explained and individual questions can be adapted so they are understood by all participants.
- **Data analysis** – semi-structured interviews produce both quantitative and qualitative data, which can be used to complement each other. Structured interviews produce quantitative data that can be easily analysed.
- **Replication** – the more standardised or structured an interview, the easier it is to replicate. Unstructured interviews are less easy to replicate but it should be possible for other researchers to review data produced.

Weaknesses of interviews

- **Interviewer effects** – interviewers may unconsciously bias answers, like by their appearance; for example, women may be less willing to talk about sex with male interviewers. Interviews are also subject to demand characteristics and social desirability bias.
- **Interview training** – a lot of skill is required to carry out unstructured interviews, particularly concerning sensitive issues, and such interviewers are not easy to find.
- **Ethical issues** – participants may not know the true purpose of an interview and there is also the danger that participants may reveal more than they wish.
- **Participant answers** – interviews are not suited to participants who have difficulty putting their feelings, opinions, etc. into words.

Design of interviews

Aside from deciding whether to use a structured, unstructured or semi-structured interview and open or closed questions, decisions need to be made about who would make the most appropriate interviewer. Several interpersonal variables affect this decision:

- **Gender and age** – the sex and age of interviewers affect participants' answers when topics are of a sensitive sexual nature.
- **Ethnicity** – interviewers may have difficulty interviewing people from a different ethnic group to themselves. Word *et al.* (1974) found that white participants spent 25 per cent less time interviewing black job applicants than white applicants.

KEY TERMS

Interviews – self-report method where participants answer questions in face-to-face situations

Structured interviews – interview method where identical closed questions are read out to participants

Unstructured interviews – interview method involving an informal discussion on a particular topic

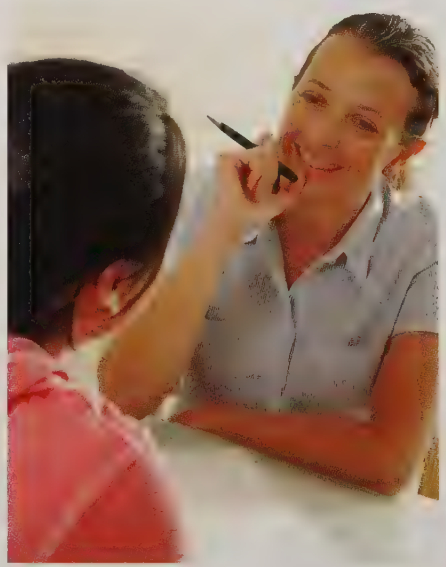


Figure 7.5 Interviews involve answering questions face-to-face

- **Personal characteristics and adopted role** – interviewers can adopt different roles within an interview setting, and use of formal language, accent and appearance can also affect how someone comes across to the interviewee.

Interviewer training is essential to successful interviewing. Interviewers need to listen appropriately and learn when to speak and when not to speak. Non-verbal communication is important in helping to relax interviewees so that they will give natural answers. Difficult and probing questions about emotions are best left to the end of the interview when the interviewee is more likely to be relaxed, whereas initial questions are better for gaining factual information.

ON THE WEB

A useful video that contrasts a poor interview technique with a good interview technique can be found by searching YouTube for 'How to do a research interview'.

YOU ARE THE RESEARCHER

Design and conduct a semi-structured interview examining student attitudes to relationships. You will need some questions that are asked of all participants, but you will also need to ask follow-up questions to explore answers further. Try and create open and closed questions in order to generate qualitative and quantitative answers.

How could you analyse and present your quantitative data? How could you use content or thematic analysis (see pages 323 and 324) to analyse and present your qualitative data? What ethical issues must you consider when writing your questions?

KEY TERMS

Correlational studies – the factors measured in a correlational study to assess their direction and strength of relationship

Co-variables – the variables investigated in a correlation. They are not referred to as the independent and dependent variables because the study is investigating the relationship between them, not trying to show a cause and effect relationship

Positive correlation – where, as the value of one co-variable increases (or decreases), the value of another co-variable similarly increases (or decreases)

Negative correlation – where, as the value of one co-variable increases, the value of another co-variable decreases

Zero correlation – where, as the value of one co-variable increases or decreases, there is no similar increase or decrease in another co-variable

Scattergrams – a type of graph for plotting correlational data

Correlational studies

Experiments look for a difference between two conditions of an IV, while **correlational studies** involve measuring the strength and direction of relationships between **co-variables**, for example Holland's (1967) study of the relationship between locus of control and obedience.

- A **positive correlation** occurs where one co-variable increases as another co-variable increases; for example ice cream sales increase as the temperature increases.
- A **negative correlation** is where one co-variable increases while another co-variable decreases; for example raincoat sales decrease as sunny weather increases.

Scattergrams (also known as scattergraphs) are a type of graph used to display the extent to which two variables are correlated. The measurement of one co-variable goes on one axis and the measurement of the other co-variable on the other axis.

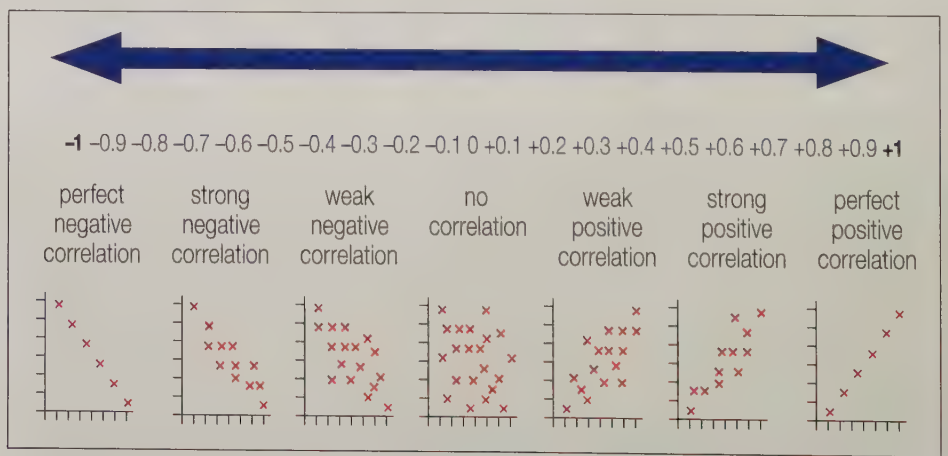

-1 -0.9 -0.8 -0.7 -0.6 -0.5 -0.4 -0.3 -0.2 -0.1 0 +0.1 +0.2 +0.3 +0.4 +0.5 +0.6 +0.7 +0.8 +0.9 +1
perfect negative correlation
strong negative correlation
weak negative correlation
no correlation
weak positive correlation
strong positive correlation
perfect positive correlation

Figure 7.6 Scattergrams and correlation strength

Advantages of correlational analysis

- **Allows predictions to be made** – predictions can be made from correlations, like predicting the number of ice creams that will be sold on hot days.
- **Allows quantification of relationships** – correlations show the strength of relationship between two co-variables. A correlation of +0.9 (90 per cent similarity) means a high positive correlation, while a correlation of –0.1 (10 per cent similarity) indicates a weak negative correlation (see below).
- **No manipulation** – correlations do not require manipulation of variables and so can be used where carrying out an experiment may be unethical.

Weaknesses of correlational analysis

- **Quantification problem** – correlations that appear low (e.g. +0.28) can sometimes be significant (meaningful) if the number of scores is high, while correlations that seem high (e.g. +0.76) are not always statistically significant.
- **Cause and effect** – as they're not done under controlled conditions, correlations do not show causality. Therefore, we cannot say that one co-variable has caused the other.
- **Extraneous relationships** – other variables may influence the co-variables. For example, many holidays are taken in the summertime and people eat ice creams on holiday; therefore, the variable 'holiday' is related to both temperature and ice cream sales.
- **Only works for linear relationships** – correlations only measure linear (straight-line) relationships. For example, correlations cannot show the relationship between temperature and aggression, as it is curvilinear (not a straight line): as temperature increases, aggression levels increase up to an optimum point: then any further increase in temperature leads to a decline in aggression levels.

YOU ARE THE RESEARCHER

Design a correlational study that studies the relationship between age and memory ability. What would be your co-variables and how would you measure them?

Previous research into whether memory declines with age is contradictory. With this in mind compose a suitable correlational hypothesis. What type of graph would you use to plot the data?

Figure 7.7 Is memory ability related to age? A correlational study would answer this question

Case studies

KEY TERM
Case studies – in-depth, detailed investigations of one individual or a small group

Case studies are in-depth, detailed investigations of one individual or a small group. They usually include biographical details, behavioural information and experiences of interest. Case studies allow researchers to examine individuals in great depth. Explanations of behaviour are outlined in subjective ways, describing what an individual feels or believes about particular issues. For example Koluchova's (1972) 'Czech twins' study (see page 133).

Figure 7.8 Twins can provide fascinating material for case studies

Advantages of case studies

- **Rich detail** – case studies provide great depth and understanding about individuals and acknowledge human diversity. Because case studies are about 'real people', they have a feeling of truth about them. Information relates to a real person, not an average gathered from many.
- **The only possible method to use** – case studies allow psychologists to study unique behaviours or experiences that could not have been studied any other way. The method also allows 'sensitive' areas to be explored, where other methods would be unethical, like the effects of sexual abuse.
- **Useful for theory contradiction** – just one case study can contradict a theory. Curtis (1977) reported on the case study of Genie (see page 133), which helped to question evidence regarding critical stages of language development.

Weaknesses of case studies

- **Not representative** – as no two case studies are alike, results cannot be generalised to others. But do we always have to find universal truths of behaviour?
- **Researcher bias** – researchers conducting case studies may be biased in their interpretations or method of reporting, making findings suspect.
- **Reliance on memory** – case studies often depend upon participants having full and accurate memories.

RESEARCH IN FOCUS

In 1972, Koluchova conducted a case study into twin boys who had been severely abused by their stepmother (see page 133).

1 Why was the case study method the only viable way of studying these boys?
2 What advantages and weaknesses of the case study method may apply in this particular study?

STRENGTHEN YOUR LEARNING

1 What similarities and differences are there between laboratory, field and natural experiments?
2 What strengths and weaknesses are there of:
   (i) laboratory experiments
   (ii) field experiments
   (iii) natural experiments?
3 For the following research methods:
   Observations
   Questionnaires
   Interviews
   Correlations
   Case studies
   (i) explain how they work
   (ii) detail their strengths and weaknesses.

7.2 Scientific processes

'The great tragedy of science – the slaying of a beautiful hypothesis by an ugly fact.'

Thomas Huxley (1870)

Aims

An **aim** is a precise statement of why a study is taking place/what is being studied, for example to investigate the effect of caffeine on reaction times. An aim should include what is being studied and what the study is trying to achieve.

Hypotheses

A hypothesis is a precise, testable prediction of what is expected to happen. For example, 'caffeine consumption will affect reaction times'.

- **The experimental/alternative hypothesis** – predicts that differences in the DV will be beyond the boundaries of chance (they will occur as a result of manipulation of the IV). Differences beyond the boundaries of chance are significant differences and this can be incorporated into a hypothesis. For example, 'caffeine consumption will significantly affect reaction times'. Statistical tests are used to see if results are significant (see page 334). The term 'experimental hypothesis' is only used with the experimental method. Other research methods use the term 'alternative hypothesis', but the definition is the same.
- **The null hypothesis** – is 'the hypothesis of no differences'. It predicts that the IV will not affect the DV. Any differences in results will be due to chance factors, not the manipulation of the IV, and will therefore be not significant and this can be incorporated into a null hypothesis. For example, 'there will be no significant difference in reaction times as a result of caffeine consumption'.

One of the two **hypotheses**, null or experimental, will be supported by the findings and thus be accepted, with the other one being rejected.

There are two types of experimental/alternative hypotheses:

- **Directional ('one-tailed') hypothesis** – predicts the direction of the results. For example, 'there will be a significant reduction in the speed of reaction times as a result of caffeine consumption'. It gets its name from predicting the direction the results will go.
- **Non-directional ('two-tailed')** – predicts that there will be a difference, but does not predict the direction of the results. For example, 'there will be a significant difference in the speed of reaction times as a result of caffeine consumption'. Reaction times will be either quicker or slower.

Directional hypotheses are used when previous research suggests that results will go in one direction, or when replicating a previous study that also used a directional hypothesis.

KEY TERMS

Aim – a precise statement of why a study is taking place

Hypotheses – precise testable research predictions

RESEARCH IN FOCUS

Have a look at Ginet & Verkampt's (2007) study of anxiety and memory (page 91). For this study compose a suitable:

(i) directional (one-tailed) hypothesis

(ii) non-directional (two-tailed) hypothesis

(iii) null hypothesis.

Sampling

A population is all of something, for example all the grains of sand on a beach. Researchers generally don't have the means to test whole populations, so they use **sampling** (testing part of the population), part of the population. Ideally a sample is representative (contains the same characteristics as the population from which it was taken) and the term target population is used to indicate the group of people the results are targeted at. Psychologists use several **sampling techniques**, each with strengths and weaknesses.

KEY TERMS

Sampling – the selection of participants to represent a wider population

Sampling techniques – various methods of selecting samples of participants from target populations

Random sampling – sampling method where all members of a population have an equal chance of being selected without bias

Bias – the degree to which participants in a sample have been selected without prejudice

Generalisation – the extent to which findings generated from a sample are representative of a target population

Opportunity sampling – sampling method where those available and willing are selected

Random sampling

Random sampling is where each member of a population has an equal chance of being selected. One way to achieve this is to place all names from the target population in a container and draw out the required sample number, while computer programs are also used to generate random lists. This results in a sample selected in an unbiased fashion.

Strengths of random sampling

- **Unbiased selection** – there is no **bias** in selection, increasing the chances of getting an unbiased and thus representative sample.
- **Generalisation** – as the sample should be fairly representative, results will be generalisable to the target population.

Weaknesses of random sampling

- **Impractical** – random sampling is difficult to achieve, as it is sometimes difficult to get full details of a target population and not all members may be available or wish to take part.
- **Not representative** – unbiased selection does not guarantee an unbiased sample; for example all females could be randomly selected, making the sample unrepresentative and thus the results not generalisable.

Opportunity sampling

Opportunity sampling involves selecting participants who are available and willing to take part, for example asking people in the street who are passing. Sears (1986) found that 75 per cent of university research studies use undergraduates as participants, simply for the sake of convenience.

Strengths of opportunity sampling

- **Ease of formation** – opportunity samples are relatively easy to create, as they use people who are readily available.
- **Natural experiments** – with natural experiments opportunity sampling usually has to be used, as the researcher has no control over who is studied.

Weaknesses of opportunity sampling

- **Unrepresentative** – the sample is likely to be biased by excluding certain types of participants and thus be unrepresentative, so that findings cannot be generalised to the target population. An opportunity sample collected in town during the day on a week day would not include those at work or college.
- **Self-selection** – participants have the option to decline to take part and the sampling technique thus turns into a self-selected sample.

Volunteer (self-selected) sampling

Volunteer or self-selected sampling involves people volunteering to participate. They select themselves as participants, often by replying to adverts.

Strengths of self-selected sampling

- **Ease of formation** – creating the sample requires little effort from the researchers (other than producing an advert), as participants volunteer themselves.
- **Less chance of 'screw you' phenomenon** – as participants are eager to take part there will be less chance of them deliberately trying to sabotage the study.

Weaknesses of self-selected sampling

- **Unrepresentative** – the sample will be biased, as volunteers tend to be a certain 'type' of person and thus unrepresentative, making results not generalisable to a target population.
- **Demand characteristics** – volunteers are eager to please, which increases the chances of demand characteristics, for example participants giving the answer they think is required.

Systematic sampling

Systematic sampling involves taking every *n*th person from a list to create a sample. This involves calculating the size of the population and then assessing what size the sample needs to be to work out what the sampling interval is. For example, if a company has a workforce of 1,000 employees and a sample of 20 participants is required, then 1000 ÷ 20 = 50; therefore take every fiftieth name from the list of employees to form the sample.

Strengths of systematic sampling

- **Unbiased selection** – there is no bias in selection, increasing the chances of getting an unbiased and thus representative sample.
- **Generalisation** – the results are representative of the population unless certain characteristics of the population are repeated for every *n*th person, which is unlikely.

Weaknesses of systematic sampling

- **Periodic traits** – the process of selection can interact with a hidden periodic trait within the population. If the sampling technique coincides with the frequency of the trait, the sampling technique is neither random, nor representative of the target population. For example, if every fifth property in a street is a flat occupied by a young person then selecting participants who live at every fifth property will not gain a representative sample.

KEY TERMS

Volunteer sampling – sampling method where participants select themselves as participants, also known as self-selected sampling

Systematic sampling – sampling method where every *n*th person from a population is selected

Figure 7.9 Self-selected sampling involves participants volunteering to take part in a study

- **Not representative** – unbiased selection does not guarantee an unbiased sample; for example all females could be selected, making the sample unrepresentative and thus the results not generalisable.

Stratified sampling

KEY TERM

Stratified sampling – sampling method where random selection of participants occurs from categories of people representing the sub-groups that comprise a target population

A **stratified sample** is a small-scale reproduction of a population. It involves dividing a population into characteristics important for the research – for example, by age, social class, etc. Then the population is randomly sampled within each stratum (category). If 12 per cent of the population is between 20 and 30 years old, then 12 per cent of the sample is randomly selected from that age sector.

Strengths of stratified sampling

- **Representative** – as selection occurs from representative sub-groups within a population, the sample should also be fairly representative.
- **Unbiased** – as random sampling is performed upon the sub-groups of a population, selection is unbiased.

ON THE WEB

A simple explanation of sampling methods, including their strengths and limitations, can be found by searching YouTube for 'A-level Psychology – Sampling Methods' (StickyStudies channel).

Weaknesses of stratified sampling

- **Knowledge of population characteristics required** – stratified samples require a detailed knowledge of the population characteristics, which may not be available.
- **Time-consuming** – the dividing of a population into stratums and then randomly selecting from each can be time-consuming.

STRENGTHEN YOUR LEARNING

1 What is the difference between:
   (i) an aim and a hypothesis
   (ii) a directional (one-tailed) and a non-directional (two-tailed) hypothesis
   (iii) an experimental and a null hypothesis?
2 For the following sampling methods:
   Random sampling
   Opportunity sampling
   Self-selected sampling
   Systematic sampling
   Stratified sampling
   (i) explain how they are conducted
   (ii) detail their strengths and weaknesses.

ASSESSMENT CHECK

1 The cognitive interview is designed to improve recall in police interviews. Researchers had some confederates perform a fake assault in front of an audience of witnesses who had replied to an advert to take part in the study. Half were interviewed using the standard police interview procedure and half by the cognitive interview technique. The amount of accurate recall was compared.

State the independent variable and the dependent variable in this study. **[1 + 1 mark]**

2 **a)** Identify one confounding variable that might occur in the above study. **[1 mark]**

b) Explain how this confounding variable might be controlled. **[2 marks]**

3 Discuss how the following might influence the findings from the study. **[2 + 2 marks]**

(i) investigator effects

(ii) demand characteristics.

4 Suggest an appropriate non-directional hypothesis for this investigation. **[2 marks]**

5 The above study was a laboratory experiment. Explain one way in which a laboratory study differs from a natural experiment. **[2 marks]**

6 What type of sample was used in the above study? Give one limitation of this type of sampling. **[1 + 2 marks]**

7 A team of researchers used a stress scale to measure the amount of stress that individual workers at a factory experienced and the number of days they were off sick over a 6-month period. The researchers found that as the amount of stress increased, the number of days absent also increased.

(i) What kind of correlation does this research show? **[1 mark]**

(ii) Outline one strength and one weakness of using correlational research to investigate the effects of stress on health. **[2 + 2 marks]**

(iii) What type of graph would be used to display the correlational data? **[1 mark]**

(iv) Compose a suitable non-directional correlational hypothesis for this study. **[2 marks]**

(v) Explain how the researchers might have gained a systematic sample for this study. **[1 mark]**

(vi) Explain one strength and one limitation of a systematic sample. **[2 + 2 marks]**

(vii) The stress scale was given to participants as a questionnaire. Discuss one advantage and one weakness of doing this in comparison to an interview. **[2 + 2 marks]**

KEY TERMS

Pilot studies – small-scale practice investigations

Aims of piloting – to identify and amend methodological flaws and create an indication of what results to expect

Independent groups design – experimental design in which each participant performs one condition of an experiment

Repeated measures design – experimental design where each participant performs all conditions of an experiment

Pilot studies

Pilot studies are small-scale practice investigations, carried out prior to research to identify potential problems with the design, method or analysis, so they can be fixed. Participants may also suggest appropriate changes; for example, if participants admit that they guessed the purpose of the study and acted accordingly (demand characteristics), changes could be made to avoid this. Pilot studies also identify whether there is a chance of significant results being found.

Experimental designs

There are three main types of experimental design: the independent groups design, the repeated measures design and the matched pairs design.

Independent groups design (IGD)

An **independent groups design** uses different participants in each of the experimental conditions, so that each participant only does one condition (either the experimental or control condition). Different participants are therefore being tested against each other.

Strengths of the independent groups design

- **No order effects** – as different participants do each condition there are no order effects whereby the order in which the conditions are done may have an effect on the outcome (see below).
- **Demand characteristics** – participants do one condition each; therefore there is less chance that they can guess the purpose of the study and act accordingly.
- **Time saved** – both sets of participants can be tested at the same time, saving time and effort.

Weaknesses of the independent groups design

- **More participants needed** – with participants each doing only one condition, twice as many participants as needed as for a repeated measures design (RMD).
- **Group differences** – differences in results between the two conditions may be due to participant variables (individual differences) rather than manipulations of the IV. For example, participants in one condition may be more intelligent than those in another condition. This is minimised by random allocation of participants to each condition.

Repeated measures design (RMD)

In a **repeated measures design** each participant is tested in all conditions of an experiment. Participants are therefore being tested against themselves.

Advantages of the repeated measures design

- **Group differences** – as the same people are measured in all conditions, there are no participant variables (individual differences) between the conditions.
- **More data/fewer participants** – as each participant produces two or more scores, more data is produced compared with an independent measures design (IMD). Therefore fewer participants are needed to get the same amount of data.

Weaknesses of the repeated measures design

- **Order effects** – with an RMD, participants do all conditions and the order in which they do these conditions can affect the results. Participants may perform worse in the second condition due to fatigue or boredom (negative order effect) or perform better due to practice or learning (positive order effect). Counterbalancing can control this, where half the participants do Condition A followed by Condition B, and the other half do Condition B and then Condition A.
- **Demand characteristics** – by participating in all conditions, it is more likely that participants may guess the purpose of the study and act accordingly.
- **Takes more time** – a gap may be needed between conditions to counter the effects of fatigue or boredom. Each condition may also need different materials; for example, in a memory test the same list of words could not be used for both conditions.

Figure 7.10 Identical twins are often used for a matched pairs design, as they form a perfect matched pair

Matched pairs design (MPD)

A **matched pairs design** is a special kind of RMD. Different, but similar, participants are used in each condition. Participants are matched on characteristics important for a particular study, such as age. Identical (monozygotic) twins are often used as they form perfect matched pairs, sharing identical genetic characteristics.

KEY TERM

Matched pairs design – experimental design where participants are in similar pairs, with one of each pair performing each condition

Advantages of the matched pairs design

- **No order effects** – as different participants do each condition there are no order effects.
- **Demand characteristics** – participants do one condition each; therefore there is less chance of them guessing the purpose of the study.
- **Group differences** – as participants are matched, there should be less chance of participant variables (individual differences) affecting the results.

Weaknesses of the matched pairs design

- **More participants** – with participants each doing only one condition, more participants are needed than for an RMD.
- **Matching is difficult** – it is impossible to match all variables between participants and an unmatched variable might be vitally important. Also, even two closely-matched individuals will have different levels of motivation or fatigue at any given moment in time.
- **Time-consuming** – it is a lengthy process to match participants.

YOU ARE THE RESEARCHER

Design a laboratory experiment that assesses whether memory recall is affected by the amount of sleep a person has had. How would you do this using an IGD? An RMD? An MPD? Compose a suitable aim and non-directional (2-tailed) hypothesis. Explain how you would attempt to control extraneous variables. How could you reduce the risk of demand characteristics? Explain how you would get a stratified sample for the study.

Ethical issues

KEY TERMS

Ethical issues – the rules governing the conduct of researchers in investigations

Code of Ethics – a set of officially approved rules for the conducting of moralistic practices within psychological research

Dealing with ethical issues in research – methods by which ethical issues can be prevented and countered

Ethical issues involve researchers assessing and acting upon all ethical considerations involved in a research study before it is conducted. The main consideration is that the health and dignity of participants should be protected. The British Psychological Society (BPS) has published a **Code of Ethics** that all psychologists should follow and most research institutions, like universities, have ethical committees which have to approve research projects before they commence. Researchers should also, before conducting research, seek peer advice (advice from colleagues), consult likely participants for their views, consider alternative research methodologies, establish a cost–benefit analysis of short-term and long-term consequences and assume responsibility for the research. If, during the research process, it becomes clear there are negative consequences resulting from the research (like harm to participants), the research should be stopped and every effort made to correct the negative consequences. Any researcher having ethical concerns about a colleague's work should contact them in the first instance, and if their concerns are not met, contact the BPS.

The Code of Ethics includes:

Informed consent – investigators should give participants sufficient details of an investigation that they can make a considered choice as to whether they wish to participate. Parental consent should be obtained in the case of children under 16 years of age. Informed consent cannot be gained from those under the influence of alcohol or drugs or mentally unfit to give consent.

Avoidance of deception – the withholding of information or the misleading of participants is unacceptable if participants are likely to object or show unease once debriefed. Intentional deception over the purpose and general nature of investigations should be avoided. Participants should not deliberately be misled without scientific or medical justification. If deception occurs, informed consent cannot be gained from participants. It is often necessary that participants do not know the purpose of a study in order to get realistic results. In such cases, deception must be dealt with in an ethical manner. There are a number of ways to achieve this:

- *Presumptive consent* – this is gained from people of a similar background to participants in a study. If they state that they would have been willing to participate, then it is deemed that the actual participants would too.
- *Prior general consent* – this involves participants agreeing to be deceived without knowing how they will be deceived. As participants know they will be deceived, this can affect their behaviour.
- *Retrospective consent* – this involves asking participants for consent after they have participated in a study. However, they may not consent and yet have already taken part.

If deception is used, participants must be told immediately afterwards and given the chance to withhold their data from the study.

Adequate briefing/debriefing – all relevant details of a study should be explained to participants before and afterwards. A debrief is important if

deception has been used. Participants should leave the study in no worse state than when they started it. Debriefing does not provide justification for unethical aspects of a study.

Protection of participants – investigators have a responsibility to protect participants from physical and mental harm during the investigation. Risk of harm must be no greater than in ordinary life.

Right to withdraw – participants should be aware that they can leave a study at any time, and can even withdraw their data after the study has finished.

Confidentiality/anonymity – participants' data should not be disclosed to anyone unless agreed in advance. Numbers should be used instead of names in published research papers. Confidentiality means that data can be traced back to names, whereas anonymous data cannot, as the researchers collect no names. Confidential data collection is preferable in cases where participants might be followed up later.

Observational research – observations are only made in public places where people might expect to be observed by strangers.

Incentives to take part – participants should not be offered bribes or promised rewards for their participation, as this puts pressure on them to take part.

Figure 7.11 Participants should not be offered money or any other incentives to participate in research studies

ON THE WEB

The British Psychological Society's code of ethics for research with humans can be found in full at:

https://www.bps.org.uk/sites/www.bps.org.uk/files/Policy/Policy%20-%20Files/BPS%20Code%20of%20Human%20Research%20Ethics.pdf

The implications of psychological research for the economy

Psychology creates practical applications used in everyday life for the betterment of society. This occurs through conducting research that allows psychology to form such practical applications. Therefore research contributes to the economy in a substantial way, such as by the creation of effective therapies for mental disorders. Ten per cent of people will spend time in a mental institution and about one in three people will receive treatment for mental problems. Effective therapies, developed through research, make huge savings in financial costs, allowing many people to return to work and contribute more fully to the economy. For example, Koran *et al.*'s. (2000) study into the atypical antipsychotic drug, olanzapine (see page 190), found that the drug when combined with the serotonin re-uptake inhibitor fluoxetine had a positive effect upon treatment of resistant forms of OCD – a finding which benefits the economy, as sufferers of OCD can return to work and thus earn money, pay taxes and not incur long-term financial costs upon the health service. Brosnan & Thorpe's (2006) study into the treatment of technophobia by systematic desensitisation (see page 168) could be used in a similar fashion, as could research into behaviourist treatments for phobias (see pages 163–70), cognitive treatments of depression (see pages 172–82) and other biological treatments of OCD (see pages 184–93).

KEY TERM

The implications of psychological research for the economy – the potential financial consequences and impact of conducting psychological studies

Evaluation

As well as contributing to the economy by producing a better functioning workforce, psychological research also cuts down on costs to the health service and to policing, the judiciary, the prison service, etc., as psychologically healthy people are less likely to incur costs upon these institutions.

When conducting research, psychologists need to be aware that ethical considerations come before profit and that psychology should not be used to exploit people, as this has negative consequences. For example, ironic deviance (see page 36) shows us that if individuals believe a source of informational influence is not genuine, they will not act upon that influence. So if psychologists were perceived to advise a practical application because they had been manipulated to do so, people are likely not to trust such an application.

Psychologists must also take care not to become divorced from the consequences of their research by being in the agentic state and not taking responsibility for their actions, such as by conducting research into psychoactive drugs that are then misused by profiteering drug companies (see Psychology in the real world, page 320). In one of his variations (see page 19) Milgram found that if participants only read out the questions and someone else administered the shocks 92.5 per cent of participants obeyed.

Reliability

KEY TERMS

Reliability – the extent to which a test or measurement produces consistent results

Ways of assessing reliability – the means by which reliability can be determined

Test–retest reliability – a means of assessing reliability where the findings from the same test given to the same participants on different occasions are compared

Inter-observer reliability – a means of assessing reliability where the degree to which observers code behaviour in the same way is calculated

Improving reliability – the ways by which levels of reliability can be increased

Reliability refers to consistency. If a study is repeated using the same method, design and measurements, and the same results are obtained, the results are said to be reliable. Reliability can be improved by developing more consistent forms of measurement, using clearly defined operational definitions and by improving inter-observer reliability (see below).

- **Internal reliability** concerns the extent to which something is consistent within itself, for example a set of scales should measure the same weight between 50 and 100 grams as between 150 and 200 grams.
- **External reliability** concerns the extent to which a test measures consistently over time.

Ways of assessing reliability

- **The split-half method** measures internal reliability by splitting a test into two and having the same participant do both halves. If the two halves of the test provide similar results this indicates that the test has internal reliability.
- **The test–retest method** measures external reliability, by giving the same test to the same participants on two occasions. If the same result is obtained, then reliability is established.
- **Inter-observer reliability** (see page 294) is a means of assessing whether different observers are viewing and rating behaviour in the same way. This can be achieved by conducting a correlation of all the observers' scores, with a high correlation indicating that they are observing and categorising behaviour consistently. Inter-observer reliability is improved by developing clearly defined and separate categories of observational criteria.

If results are unreliable, they cannot be trusted. However, results can be reliable, but not be valid (accurate). For example, if you add up 1 + 1 several times and each time calculate the answer as 3, then your result is reliable (consistent), but not valid (accurate).

Validity

Validity concerns accuracy, the degree to which something measures what it claims to. Therefore validity refers to how accurately a study investigates what it claims to and the extent to which findings can be generalised beyond research settings as a consequence of a study's internal and external validity (see below). Validity can be improved by improving reliability (see above) and by improving internal and external validity (see below).

- **Internal validity** concerns whether results are due to the manipulation of the IV and have not been affected by confounding variables. Internal validity can be improved by reducing investigator effects, minimising demand characteristics and by the use of standardised instructions and a random sample. These factors ensure a study is highly controlled, leaving less doubt that observed effects are due to poor methodology.
- **External validity** refers to the extent to which an experimental effect (the results) can be generalised to other settings (**ecological validity**), other people (population validity) and over time (temporal validity). Milgram's electric shock study lacked external validity, as it is not usual to shock people for getting questions wrong, the study only used male participants and was a product of its time. External validity can be improved by setting experiments in more naturalistic settings.

KEY TERMS

Validity – the extent to which results accurately measure what they are supposed to measure
Improving validity – the ways by which levels of validity can be increased
Ecological validity – a type of external validity concerning the extent to which the findings of studies can be generalised to real-life settings
Assessment of validity – the means by which validity can be determined
Face validity – a means of assessing validity which involves 'eyeballing' the extent to which something measures what it claims to
Concurrent validity – a means of assessing validity that correlates scores on a test with another accepted as being valid
Temporal validity – a type of external validity concerning the extent to which the findings of studies remain true over time

RESEARCH IN FOCUS

Hofling (1966) performed an obedience experiment in the naturalistic setting of a hospital and found that the authority of doctors was a greater influence on nurses' behaviour than hospital rules.

Explain why initially it seems as if this study has high external validity, but why on closer inspection it seems that it actually has low external validity. (For further guidance, see page 25.)

Figure 7.12 Hofling's study was performed with real nurses in a real hospital setting, but did it still lack external validity?

Ways of assessing validity

- **Face validity** is a simple way of assessing validity and involves the extent to which items look like what a test claims to measure.
- **Concurrent validity** assesses validity by correlating scores on a test with another test known to be valid.
- **Predictive validity** assesses validity by predicting how well a test predicts future behaviour; for example, do school entrance tests accurately predict later examination results?
- **Temporal validity** assesses to what degree research findings remain true over time.

STRENGTHEN YOUR LEARNING

1 Why is it important that research be carried out in an ethical way?
2 Explain what is meant by the following ethical considerations:
Informed consent
Avoidance of deception
Briefing/debriefing
Protection from harm
The right to withdraw
Confidentiality/anonymity
Incentives to take part.
3 How can deception be avoided?
4 What do the following terms refer to:
(i) reliability
(ii) validity?
5 Explain what is meant by:
(i) internal reliability
(ii) external reliability
(iii) internal validity
(iv) external validity.
6 How can each be assessed?
7 Explain what is meant by inter-observer reliability and how it can be achieved.
8 (i) What is a pilot study?
(ii) Why would one be conducted?
9 For the following experimental designs:
Independent groups design
Repeated measures design
Matched participants design
(i) explain how they would be conducted
(ii) detail their strengths and weaknesses.

Features of science

'No amount of experimentation can ever prove me right; a single experiment can prove me wrong.'

Albert Einstein (1920)

KEY TERMS

The scientific process – a means of acquiring knowledge based on observable, measurable evidence
Features of science – the elements and characteristics comprising the scientific process
Empirical method – the scientific means by which objective, quantifiable observations are performed in a controlled, replicable setting in order to test or refine a theory

Science is a system of acquiring knowledge through a process known as the scientific method (**the scientific process**), which is defined as the observation, identification, description, experimental investigation and theoretical explanation of phenomena.

The scientific method has three parts to it:

1 Observation and description of a phenomenon or group of phenomena
2 Formulation of a hypothesis to explain the phenomena. Use of the hypothesis to predict the existence of other phenomena, or to predict quantitatively the results of new observations
3 Performance of experimental tests of the predictions by several independent experimenters and properly performed experiments.

The prime **feature of science** is its dependence on **empirical methods** of observation and investigation. This involves observations based upon sensory information rather than simply upon thoughts and beliefs. Therefore

a scientific idea is one that's been subjected to empirical testing by the use of rigorous observations of events and/or phenomena. For science to make sense there must be an explanation of empirically observed phenomena, achieved by developing theories that can be tested and improved by empiricism.

Science therefore involves making predictions, tested by scientific observations (empirical ones). Such observations are made without bias or expectation by the researcher and are performed under controlled conditions. In this way theories and hypotheses are validated (found to be true) or falsified (found to be untrue). It is the belief that this ability to predict and control behaviour under experimental conditions can also be achieved in real-life settings, which makes Psychology opt for science as its selected path towards the acquisition of knowledge.

KEY TERMS

Replicability – being able to repeat a study to check the validity of the results

Objectivity – observations made without bias

Falsification – that scientific statements are capable of being proven wrong

Replicability

Replicability involves repeating research to check the validity of the results. Therefore research has to be fully and clearly written up so that it can be repeated under identical conditions. Fleischmann & Pons (1989) claimed to have created cold fusion, a way of producing abundant, cheap energy. However, replications of their experimental technique failed to get the same results. They had made an error in their procedure and only by replication were scientists able to realise this.

Objectivity

Objectivity is an important part of empiricism, where observations are made through sensory experience and not from the biased viewpoint of researchers.

Empirically observed phenomena must be objective to be considered truly scientific. To lessen the possibility of unconscious bias, researchers aim to use standardised instructions, operational definitions of observed variables and physically defined measurements of performance, the double-blind technique, etc. If phenomena are observed in a biased fashion, then they are subjective rather than objective, such as a biased interpretation of answers to an interview.

Most bias is unconscious, but there have been incidences of deliberate fraud too. This is important, because practical applications that are based on flawed research could have disastrous consequences. Peer review acts as a 'gatekeeper' to stop the publication of unscientific and flawed research. Replication also helps to show if research findings are valid.

Falsification

Part of the verification (validation) process is the idea of falsifiability, where a scientific theory or hypothesis must be empirically testable to see if it is false. Replication is the accepted way of determining this. Freud's psychodynamic approach is criticised for being unfalsifiable, as Freud placed interpretations on behaviour that couldn't be empirically tested to see if they were untrue.

Popper (1935) proposed the hypothetico-deductive model of science and is credited with advancing empirical falsification into scientific methods and procedures. He argued that no matter how many positive validations of a scientific theory occur through experimental testing, it doesn't prove it as undeniably true. However, one example of **falsification** is enough to render a theory untrue.

Popper sees falsifiability as being the determining line between what is and what isn't scientific.

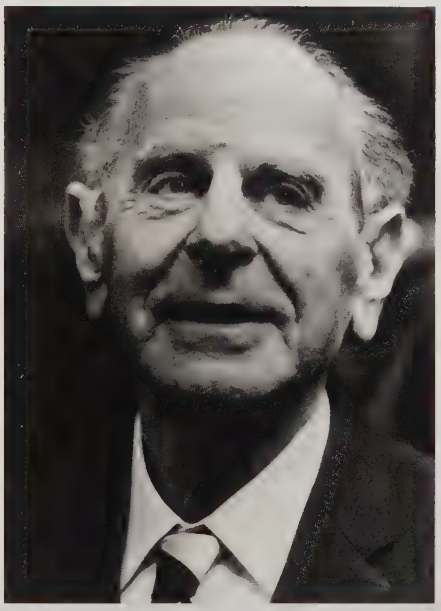


Figure 7.13 Karl Popper is credited with introducing empirical falsification into scientific methods and procedures

KEY TERMS

Theory construction – the means by which hypotheses are generated and tested under scientific conditions in order to formulate explanations of phenomena

Hypothesis testing – the assessment of testable predictions under scientifically controlled conditions

Paradigm – an accepted set of beliefs concerning a phenomenon

Paradigm shifts – revolutionary changes in scientific assumptions

Theory construction and hypothesis testing

Popper saw tentative theories as being the first stage of the scientific process. These are used to generate predictions, expressed as testable hypotheses, which are tested by rigorous empirical means, the important point being that science doesn't depend upon chance observations, but on carefully arranged unbiased observations. Therefore initial observations yield up information about the world which is then formulated into theories that try to account for this information. Predictions in the form of testable hypotheses are formulated and experimentally tested, producing data that can be statistically analysed to see if the theory can be refuted or falsified, often leading to adjustments in the theory. This is seen as a process of verisimilitude, increasingly gaining closeness to the truth.

So the scientific method operates as a cycle with set phases:

1 **Inductive phase** – observations yield information that is used to formulate theories as explanations.

2 **Deductive phase** – predictions made from theories, in the form of testable hypotheses, are tested and yield data that is analysed, leading to theory adjustment.

Following this process it then becomes possible to generate laws and scientific principles. Popper reasons that a theory can be accepted as being validated if research evidence supports it, but that one finding of it not being true leads to its falsification. Therefore, although a theory can easily be disproved, it is never a 100 per cent certainty that it is absolutely true.

The most empirically based research method in psychology is the laboratory experiment, which allows causality (cause and effect relationships) to be established.

Other methods of hypothesis testing have reduced capability to determine causality, such as field and natural experiments, but even non-experimental methods can be performed using the scientific method, like naturalistic observations. Objectivity is improved by methods like inter-observer reliability, where researchers make efforts to ensure they observe phenomena in identical, unbiased ways. Therefore results can then be claimed to be valid.

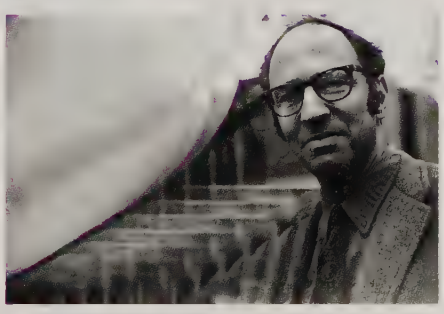


Figure 7.14 Thomas Kuhn argued that science advances through paradigm shifts, where an accepted viewpoint is replaced by another

Physics and chemistry are seen as 'hard', objective sciences, but a problem for psychology is that it is regarded as a 'soft science', because it tries to use the deterministic and reductionist principles of science, but due to the subjective subject matter, research can't be carried out with the usual rigorous vigour.

ON THE WEB

A short video clip that explains paradigm shifts through a visual demonstration, using pom-poms and a bottle, can be found on YouTube by searching for 'Kuhn's paradigm shift'.

Paradigm shifts

Kuhn (1962) argued that Popper's idea of a scientific method involving induction and deduction isn't how science works. He believed that scientists collect data that fits the accepted assumptions of a science. This creates a type of bias whereby scientists attempt to find examples confirming their hypotheses rather than refuting them, with scientific journals publishing and focusing upon confirmatory examples of research, rather than non-confirmatory ones.

Kuhn referred to this as a **paradigm** (see page 7), 'a shared set of assumptions about the subject matter of a discipline and the methods appropriate to its study'. Very occasionally a paradigm is replaced with a new paradigm, often emerging from a minority position, for example the acceptance in physics of Einstein's beliefs about the nature of the universe.

Kuhn therefore argued that scientific advancement occurs not through the steady progress advocated by Popper, but instead by revolutionary **paradigm shifts**.

It may be the case that Psychology isn't yet in its scientific phase as it has yet to establish its paradigm. The counterview to this is that Psychology has a number of paradigms, such as behaviourism, evolutionary psychology, etc.

Reporting psychological investigations

Progress in science depends on communication between researchers. It is therefore essential to describe the results of research as accurately and as effectively as possible. To get research published in eminent peer-reviewed journals psychologists have to write reports in a conventional manner. This means that reports are written in such a way that replication would be possible, allowing others to repeat the research to check results.

The basic requirements of a report are to communicate:

- what was done
- why it was done
- what was found
- what it means.

There is no single best way to set out a report, but the general **sections of a scientific report** are as follows:

1 Title
2 Table of contents
3 **Abstract**
4 **Introduction**
5 Aims
6 Hypotheses
7 **Procedure/method**
8 **Findings/results**
9 **Discussion**
10 Conclusion
11 **References**
12 Appendices.

1. Title

This should be clear, relevant and fully informative.

2. Table of contents

This is optional, but best included, along with page numbers.

3. Abstract

A summary of the research. The abstract generally consists of two sentences each on the theoretical background (previous research), aims and hypotheses, methodology, results, conclusions and suggestions for future research.

4. Introduction

This details why the study was conducted. General theoretical background, controversies and previous research investigations of the chosen topic are covered. Only relevant material should be used. A 'funnel' technique is used, starting off with a broad theoretical perspective, which then narrows down to the precise study area and leads on to the aims and hypotheses.

5. Aims

The overall aim(s) are stated clearly, precisely and concisely.

6. Hypotheses

The experimental/alternative hypotheses and the null hypothesis are stated, precisely and unambiguously. A justification of the direction of hypotheses (one-tailed or two-tailed) is also included, as is the level of significance, which is normally 5 per cent ($p < 0.05$).

KEY TERMS

Reporting psychological investigations – the conventional and accepted way in which psychological research is written up and published

Sections of a scientific report – the various divisions that comprise the write-up of a psychological study

Abstract – a division of a write-up of a psychological report that summarises the research

Introduction – a division of a write-up of a psychological report that details the reasons for a study being conducted

Procedure/method – a division of a write-up of a psychological report that outlines the design decisions and procedures of a study

Findings/results – a division of a write-up of a psychological report that presents the findings of a study

Discussion – a division of a write-up of a psychological report that analyses and evaluates the findings of a study

References – a division of a write-up of a psychological report that lists details of all sources used in a study

7. Procedure/method

An outline of what was done. All methodological details are reported so the study can be replicated. Materials used in the study, like questionnaires and standardised instructions, are included in the appendices. This section splits into several sub-sections:

Design

Includes:

- choice of method, e.g. laboratory experiment
- choice of design, e.g. independent measures
- choice of techniques, e.g. time-sampling
- identification of variables, e.g. IV, DV and extraneous variables
- ethical considerations.

Participants

Includes sampling details such as:

- target population described in terms of relevant variables, like age, gender, etc.
- sampling method, e.g. opportunity sampling
- actual sample, including how many participants and how they were recruited and selected
- naivety of participants as to the purpose of the study and whether any declined to take part or subsequently dropped out
- allocation of participants to the testing conditions.

Apparatus/Materials

Description of any technical equipment involved and how it was used. Only materials directly relevant to the investigation are included. Any mark schemes, questionnaires go in the appendices.

Standardised procedure

Consists of a step-by-step procedure allowing replication of the study. Includes details of where the study took place, any standardised instructions and debriefing procedures. If instructions are lengthy they can be placed in the appendices and are referenced here. Material detailed in the method section is not repeated here.

Controls

Details of such controls as counterbalancing, random allocation of participants to groups, single- or double-blind procedures, control of extraneous variables, and what steps were taken to avoid bias in the sampling or experimental procedures.

8. Findings/results

Involves a presentation of what was found in terms of the data collected. This occurs as abbreviated or summary versions of the raw data, written in words with the support of tables and/or graphs.

Raw data is referenced here and presented in the appendices. One example answer sheet, questionnaire, etc. is included in the appendices.

Descriptive statistics

Key findings should be described briefly in the most straightforward manner to give readers a chance to 'eyeball' the data.

Numerical statistics, like measures of central tendency (mean, mode or median), measures of dispersion (range, standard deviation) should be included and results summarised in the most appropriate graphical form. Only one graph should be presented for the same data and should be visually clear and not over-complex.

Tables, graphs, etc. should be clearly titled and labelled and units of measurement specified.

Tables should be numbered and titled above the table, figures and graphs below. Labels on axes should be unambiguous.

Inferential statistics

Reasons for selecting a particular statistical test are given, as well as what it tests for. Actual calculations are referenced here, but placed in the appendices.

The outcome of statistical analyses is given along with critical table values of the test, the significance level and whether the test was one-tailed or two-tailed.

The outcome is explained in terms of acceptance and rejection of the experimental and null hypotheses.

9. Discussion

This section explains what the results mean and is broken down into several sub-sections.

Explanation of findings

Key findings are described that relate to the aims and hypotheses. All findings should be presented, including minor ones, unexpected and contradictory ones, plus an explanation of what the findings show and why they occurred.

Relationship to background research

Research is presented and discussed in terms of previous research findings presented in the introduction. Aspects of the design that may account for differences in the findings from previous studies are outlined.

Limitations and modifications

Possible sources of error, like flawed measurement techniques, poor sampling, lack of controls and/or poor procedures, etc. are outlined and discussed. Possible means of rectifying these faults are presented.

Implications and suggestions for future research

Further research studies suggested by the findings of the current one are presented here, as well as other possible ways of testing the hypotheses.

Also presented are any implications and applications that the findings of the present study suggest. Specific suggestions, like using more participants, eliminating confounding variables such as background environmental noise, and improving standardised instructions, are fine provided it is demonstrated that these factors have affected the findings in some way.

10. Conclusion

A concise paragraph is presented that summarises key conclusions drawn from the study.

11. References

Full details are listed of all references cited in the report. This enables others to research the references if desired. The standard format is as follows:

ON THE WEB

Although textbooks relate the main features of important research studies, there is no substitute for reading the original report write-ups. Go to the following link to access the website, 'Classics in the History of Psychology':

http://psychclassics.yorku.ca/index.htm

Read through famous psychology papers, which will be of use elsewhere in your studies, but also to see how research is written up and presented.

- *Journal articles* – Author's surname(s), initial(s), year of publication (in brackets), title of article. Title of journal (in full, italicised). [Online, if applicable, in square brackets] Volume number (part number/month in brackets), page number(s) (p.xx). Available from: URL. [Accessed: followed by the date viewed in square brackets]. For example:

  Shepard, R. and Metzler, J. (1971) Mental rotation of three dimensional objects. *Science*. 171(972), pp.701–3.

- *Books* – Author's surname(s), initial(s) (and 'ed.' or 'eds' if they are the editor/s), year of publication (in brackets), title of book (initial capitals for key words, italicised), edition (if not the first). Place of publication: publisher. For example:

  Wodehouse, P.G. (1917) *The Man with Two Left Feet*. London: Methuen.

- *Chapters in books* – Combines aspects of the procedure for journal articles and books (see above), by giving the author of the chapter and their chapter title first followed by 'in Smith, A. (ed.) …', etc. For example:

  Cohen, G. (1982) 'Theoretical interpretations of visual asymmetries', in Beaumont, J.G. (ed.) *Divided Visual Field Studies of Cerebral Organisation*. London: Academic Press.

12. Appendices

Numbered appendices are provided, containing full instructions given to subjects, raw data, and calculations for statistical analyses, plus other stimulus materials used. Information should be presented clearly and unambiguously.

The role of peer review in the scientific process

KEY TERMS

Peer review – scrutiny by experts of research papers to determine scientific validity

Research papers – investigation reports written to a conventional format

Peer review is part of the verification process where research is deemed to be scientifically acceptable or not. It consists of a system used by scientists to determine whether research findings can be published in scientific journals. The peer review system subjects scientific **research papers** to independent scrutiny by scientific experts (peers) before a decision is made about whether they can be published. As such, it acts as a 'gatekeeper' or filter system reducing the chances of flawed or unscientific research being accepted as fact. It operates on the belief that the status of research results is as important as the findings themselves.

There is a growing amount of scientific information being made public, as well as an increasing number of organisations, such as drug companies, promoting and discussing scientific research in public, and it is often difficult to decide which research is worthy of consideration and which is invalid, especially when different scientists argue completely different viewpoints – for example, whether or not climate change is due to human influence.

Over a million research papers are published in scientific journals each year, but although the peer review system is recognised and used by scientists globally as the best means of assessing scientific plausibility, the general public knows little, if anything, about this verification process. However, it is important that the public, especially those who deal with scientific claims, such as patient groups (an example of a patient group for depression is the Black Dog Institute), are aware of and understand peer review if they are to avoid the damage that comes from accepting poor scientific research.

The peer review process

During peer review it is usual for several expert reviewers to be sent copies of a researcher's work by a journal editor. These reviewers report back to the editor, highlighting weaknesses or problem areas, as well as suggestions for

improvement if necessary. There are generally four options for reviewers to recommend:

1 Accept the work unconditionally
2 Accept it so long as the researcher improves it in certain ways
3 Reject it, but suggest revisions and a resubmission
4 Reject it outright.

Single-blind review

This is the usual form of peer review, which involves the names of reviewers not being revealed to the researcher. The idea is that reviewer anonymity allows for an unbiased review free from interference by the researcher. However, there is the danger that anonymous reviewers may delay the review process to allow them to publish similar research first, and/or hide behind their anonymity to be undeservedly harsh.

Double-blind review

This involves both reviewers and the researcher being anonymous. The idea is that bias based on the researcher's ethnicity, gender, age, etc. will not occur and that research will be peer reviewed fairly and not be based upon the researcher's fame (or lack of it). However, it's likely that the researcher would be identifiable from the writing/research style, etc.

Open review

This involves reviewers and the researcher being known to each other. This is seen as reducing the risk of personal comments and plagiarism (stealing other people's work) and encourages open, honest peer reviewing. However, it may be that deserved criticism is watered down due to politeness or fear of retribution from famous, powerful researchers.

Criticisms of peer review

Critics argue that peer review isn't unbiased. Research occurs in a narrow social world and social relationships within that world affect objectivity and impartiality. In obscure research areas it may not be possible to find persons of sufficient knowledge to carry out a proper peer review. There are even suspicions that some scientists' ability to consider research in an unbiased and professional manner is compromised by them being funded by organisations which want certain research to be seen as scientifically acceptable. Reviewers have also been accused of not accepting research, so that their own studies can be published, and even of plagiarising (copying) research and then passing it off as their own. One way of attempting to address this is to ensure reviewers are anonymous and independent.

A further criticism is that the ability to publish research papers is controlled by elites. Therefore there may be resistance to revolutionary ideas that go against the elite or prevailing views, fitting Kuhn's idea that science doesn't advance steadily, but by one paradigm being toppled and replaced with another.

Peer review is also a slow process, sometimes taking months or even years to complete.

The consequences of false or unscientific research being accepted as true can be serious, not least because many other scientists' subsequent research may be built upon the fact of the original research being accepted as true. Cyril Burt, who falsified research into the heritability of intelligence, was a major figure in the field of intelligence and his research findings, widely accepted by the psychological community as being true, greatly influenced the work of subsequent researchers, who often took his work as a starting point for their own research.

Figure 7.15 Peer review subjects research reports to intense scrutiny to ensure their scientific validity before publication

RESEARCH IN FOCUS

Increasing numbers of psychologists are publishing their research papers privately on the internet without having them subjected to peer review.

1 What are the dangers of conducting scientific research in this way?
2 What negative perceptions of the peer review system may be leading to psychologists doing this?

PSYCHOLOGY IN THE REAL WORLD

Scientific research is supposed to be conducted in a rigorous, unbiased and objective manner, or else the theories and practical applications based upon such research will be flawed, with potentially catastrophic consequences. That is why research has to be conducted in a replicable manner, be capable of being falsified and be subjected to peer review before being published in approved journals.

Figure 7.16 Evidence suggests that research is often not as unbiased and objective as it should be

And yet the accusation remains, from many scientists in the field, that published research is often a world away from these ideals. One problem is that too often too little is revealed, with researchers, for example, not revealing their financial ties to drug companies they are conducting research for when asking participants to enrol in drug testing. Another major problem is that of company funded research; the *New England Journal of Medicine* (1998) reported that 96 per cent of researchers who published positive results for specific drugs had financial ties to the drug manufacturers, while only 37 per cent of researchers publishing critical papers had such ties. And it gets even murkier. Companies often own the data from research and so suppress unfavourable data and only publish favourable results. A drug's effectiveness may be reported, but not the fact that it has toxic side-effects. Another strategy is to bias the way in which research is designed and conducted, for instance comparing a higher dose of a favoured drug against a lower dose of a comparison drug. Those that expose such dark practices can be hit with expensive lawsuits, making future whistle-blowers more unlikely.

Only by having fully independent researchers and all research findings published will we have findings that can truly be trusted. Legislators in Europe have been drafting laws to force companies to publish all their research, including that which shows negative results or dangerous side-effects. However, companies have been financing so called 'patient interest groups' to campaign against such legislation. It seems we are a long way yet from being able to fully trust the research we see published in scientific journals.

ON THE WEB

For a detailed report of what peer review is and does, including a discussion of the criticisms levelled at the process and the pressures on researchers to act dishonestly, go to:

www.columbia.edu/cu/21stC/issue-1.1/peer.htm

Or, alternatively, look at:

http://science.howstuffworks.com/innovation/scientific-experiments/scientific-peer-review.htm

STRENGTHEN YOUR LEARNING

1. What are empirical methods of observation?
2. What is meant by falsification?
3. How is replication part of the falsification process?
4. Explain what is meant by objectivity.
5. Explain how Popper saw the process of science as working.
6. What is meant by paradigm shifts?
7. Describe the conventional method of writing up practical reports.
8. Why are reports written up in a conventional manner?

ASSESSMENT CHECK

1 Researchers decided to study the behaviour of a young girl who experienced disruption to attachment when she had to go into hospital for a few days. Naturalistic observation of the girl before and after the separation was conducted, with each period of observation lasting for two hours.

(i) State two behavioural categories the researchers could use to record the girl's behaviour. **[2 marks]**

(ii) Briefly describe how the researchers might record the girl's behaviour. **[2 marks]**

(iii) Explain why a pilot study might be carried out before the main observation. **[2 marks]**

(iv) Explain why the researchers would need to establish inter-rater reliability. **[2 marks]**

(v) Outline how inter-rater reliability could be established. **[2 marks]**

2 A stratified sample of participants were shown a tray containing 30 unrelated items for 30 seconds, after which time the tray was removed from sight. Half the participants were made moderately anxious, by wearing fake electrodes, which they were told would give them electric shocks for answers they got wrong. The other participants had low anxiety levels, through being told that the fake electrodes were merely monitoring bodily processes. Participants were instructed to recall as many items as possible.

(i) State the IV and the DV in this study. **[1 + 1 marks]**

(ii) Identify the experimental design used in this study. **[1 mark]**

(iii) Discuss one strength and one weakness of this experimental design in the context of this study. **[2 + 2 marks]**

(iv) Discuss one strength and one weakness of the sampling method used in this study. **[2 + 2 marks]**

(v) Explain two ethical issues the researchers would have to consider. **[2 + 2 marks]**

(vi) Explain one way in which psychological research might benefit the economy. **[2 marks]**

(vii) Briefly describe one method the researchers could use to check the validity of the data collected in this study. **[2 marks]**

3 Scientific research should be falsifiable. Explain what is meant by falsification and what researchers should do to ensure that research is falsifiable. **[6 marks]**

4 Explain one reason why research should undergo peer review. **[2 marks]**

5 Discuss criticisms of the peer review process. **[6 marks]**

6 Outline the major features of science. **[8 marks]**

7.3 Data handling and analysis

'Data! Data! Data! I can't make bricks without clay.'
Sherlock Holmes (1892)

Quantitative and qualitative data

KEY TERMS

Quantitative data – data occurring in numerical form

Qualitative data – non-numerical data expressing meanings, feelings and descriptions

Quantitative data is numerical (occurs as numbers), like counting the number of stressful incidents in a study, while **qualitative data** is non-numerical (occurs in forms other than numbers), like describing the emotional experience of each stressful incident. Research involves the collection of both quantitative and qualitative data. Qualitative studies tend to produce subjective, detailed, less reliable data of a descriptive nature, whereas quantitative studies produce objective, less detailed, more reliable data of a numerical nature. Although they are different forms of data they can often be used collectively to give stronger emphasis to research findings and a deeper insight.

Qualitative data provides insight into feelings and thoughts that quantitative data cannot, though analysis of such data can be very subjective, based on the researcher's own interpretation. Qualitative data can be converted into quantitative data, though, through content analysis (see page 323) and then be presented in quantitative forms, such as tables and graphs, and be analysed by numerical means such as by statistical tests.

Experiments are seen as producing mainly quantitative data, though qualitative data in the form of opinions/comments from participants can also be gathered. Observations, through the use of behavioural categories and ratings of behaviour, produce quantitative data, while questionnaires produce quantitative data from closed questions and qualitative data from open questions. Similarly, interviews produce quantitative data from structured interviews and qualitative data from unstructured interviews. Correlational data tends to be quantitative, while case studies produce mainly qualitative data.

Table 7.2 Qualitative and quantitative data

Qualitative data	Quantitative data
Subjective	Objective
Imprecise non-numerical measures used	Precise numerical measures used
Rich and detailed	Lacks detail
Low in reliability	High in reliability
Used for attitudes, opinions, beliefs	Used for behaviour
Collected in 'real-life' setting	Collected in 'artificial' setting

ON THE WEB

An illuminating video concerning the differences between qualitative and quantitative data can be found on YouTube by searching for 'Qualitative VS Quantitative Research'.

Primary and secondary data

Primary data refers to original data collected specifically towards a research aim, which has not been published before, while **secondary data** refers to data originally collected towards another research aim, which has been published before. Primary data is more reliable and valid than secondary data, as it has not been manipulated in any way. However, secondary data drawn from several sources can help to give clearer insight into a research area that primary data cannot.

KEY TERMS

Primary data – data collected specifically towards a research aim, which has not been published before

Secondary data – data originally collected towards another research aim, which has been published before

Meta-analysis – a process in which a large number of studies, which have involved the same research question and methods of research, are reviewed together and the combined data is tested by statistical techniques to assess the effect size

Meta-analysis

Meta-analysis is a statistical technique for combining the findings of several studies of a certain research area, for example Grootheest *et al.*'s (2005) meta-analysis of the heritability of OCD, taken from several twin studies (see page 185). As a meta-analysis involves combining data from lots of smaller studies into one larger study, it allows the identification of trends and relationships that wouldn't be possible from individual smaller studies. The technique is especially helpful when a number of smaller studies have found contradictory or weak results, in order to get a clearer view of the overall picture.

RESEARCH IN FOCUS

Deffenbacher (1983) performed a meta-analysis into the role of anxiety in the accuracy of EWT (see page 91).

1. How was this achieved?
2. Would the researchers be using primary or secondary data?
3. What are the main strengths of conducting a meta-analysis?
4. Can you think of any problems with this type of research?

Content analysis

Content analysis is a method of quantifying qualitative data through the use of coding units and is commonly performed with media research. It involves the quantification of qualitative material, in other words, the numerical analysis of written, verbal and visual communications. For example, Waynforth & Dunbar (1995) analysed 'lonely hearts' columns to find out whether men and women look for different things in relationships.

Content analysis requires coding units to categorise analysed material, like the number of times women commentators appear in sports programmes. Analysis can involve words, themes, characters or time and space. The number of times these things do not occur can also be important.

KEY TERM

Content analysis – a method of quantifying qualitative data through the use of coding units

Table 7.3 Coding units for content analysis

Unit	Examples
Word	The number of slang words used
Theme	The amount of violence on TV
Character	The number of female commentators there are in TV sports programmes
Time and space	The amount of time (on TV) and space (in newspapers) dedicated to eating disorders

Strengths of content analysis

- **Ease of application** – content analysis is an easy-to-perform, inexpensive research method, which is non-invasive, as it doesn't require contact with participants.
- **Complements other methods** – content analysis can be used to verify results from other research methods and is especially useful as a longitudinal tool (detecting trends; changes over time).
- **Reliability** – establishing reliability is simple as a content analysis is easy to replicate, through others using the same materials.

Weaknesses of content analysis

- **Descriptive** – content analysis is purely descriptive and so does not reveal underlying reasons for behaviour, attitudes, etc. ('what' but not 'why').
- **Flawed results** – is limited by availability of material; therefore observed trends may not reflect reality. For example, negative events receive more coverage than positive ones.
- **Lack of causality** – content analysis is not performed under controlled conditions and therefore does not show causality.

Thematic analysis

KEY TERM
Thematic analysis – a method of qualitative research linked to content analysis, which involves analysing data to identify the patterns within it

Thematic analysis is a qualitative analytic method for identifying, analysing and reporting themes (patterns) within data, with patterns identified through data coding. Ultimately, thematic analysis organises, describes and interprets data. The identified themes become the categories for analysis, with thematic analysis performed through the process of coding involving six stages:

1. **Familiarisation with the data** – involves intensely reading the data, to become immersed in its content.
2. **Coding** – involves generating codes (labels) that identify features of the data important to answering the research question.
3. **Searching for themes** – involves examining the codes and data to identify patterns of meaning (potential themes).
4. **Reviewing themes** – involves checking the potential themes against the data, to see if they explain the data and answer the research question. Themes are refined, which can involve splitting, combining or discarding one.
5. **Defining and naming themes** – involves a detailed analysis of each theme and creating an informative name for each one.
6. **Writing up** – involves combining together the information gained from the analysis.

Thematic analysis goes beyond just counting words or phrases, and involves identifying ideas within data. Analysis can involve the comparison of themes, identification of co-occurrences of themes and using graphs to display differences between themes.

Descriptive statistics

Descriptive statistics provide a summary of a set of data, drawn from a sample, that applies to a whole target population. They include measures of central tendency and measures of dispersion.

Measures of central tendency

Measures of central tendency are used to summarise large amounts of data into averages ('typical' mid-point scores). There are three types: the **median**, the **mean** and the **mode**.

The median

The median is the central score in a list of rank-ordered scores. With an odd number of scores, the median is the middle number. With an even number of scores, the median is the mid-point between the two middle scores and therefore may not be one of the original scores.

The advantages of the median are:

- It is not affected by extreme 'freak' scores.
- It is usually easier to calculate than the mean.
- The median can be used with ordinal data (ranks), unlike the mean.

The weaknesses of the median are:

- It is not as sensitive as the mean, because not all the scores are used in the calculation.
- It can be unrepresentative in a small set of data. For example: 1, 1, 2, 3, 4, 5, 6, 7, 8 – the median is 4.

The mean

The mean is the mid-point of the combined values of a set of data and is calculated by adding all the scores up and dividing by the total number of scores.

The advantages of the mean are:

- It is the most accurate measure of central tendency as it uses the interval level of measurement, where the units of measurement are of equal size (for example, seconds in time).
- It uses all the data in its calculation.

The weaknesses of the mean are:

- It is less useful if some scores are skewed, such as if there are some large or small scores.
- The mean score may not be one of the actual scores in the set of data. For example: 1, 1, 2, 3, 4, 5, 6, 7, 8 – the mean is 4.1 (1 + 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 = 37. 37/9 = 4.1)

The mode

The mode is the most common, or 'popular', number in a set of scores.

The advantages of the mode are:

- It is less prone to distortion by extreme values.
- It sometimes makes more sense than the other measures of central tendency. For example, the average number of children in a British family is better described as 2 children (mode) rather than 2.4 children (mean).

The weaknesses of the mode are:

- There can be more than one mode in a set of data. (For example, for the set of data 2, 3, 6, 7, 7, 7, 9, 15, 16, 16, 16, 20, the modes are 7 and 16.)
- It does not use all the scores.

KEY TERMS

Descriptive statistics – the means by which data is summarised to display meaningful patterns

Measures of central tendency – methods of estimating mid-point scores in sets of data

Median – the central value of a set of data when arranged in numerical order

Mean – the central value of a set of data calculated by dividing the sum of scores by the number of scores

Mode – the most frequently occurring value in a set of data

KEY TERMS

Measures of dispersion – measurements of the spread of scores within a set of data

Range – the difference between the highest and lowest scores in a set of data

Standard deviation – how far on average individual scores in a set of data are from the mean value of that set of data

Measures of dispersion

Measures of dispersion provide measures of the variability (spread) of scores. They include the **range** and **standard deviation**.

The range

The range is calculated by subtracting the lowest value from the highest value in a set of data.

The advantages of the range are:

- It is fairly easy and quick to work out.
- It takes full account of extreme values.

The weaknesses of the range are:

- It can be distorted by extreme 'freak' values.
- It does not show whether data are clustered or spread evenly around the mean. For example, the range of the two sets of data below is the same (21 – 2 = 19), despite the data being very different.

  Data set one: 2, 3, 4, 5, 5, 6, 7, 8, 9, 21

  Data set two: 2, 5, 8, 9, 10, 12, 13, 15, 16, 18, 21

Standard deviation

Standard deviation is a measure of the variability (spread) of a set of scores from the mean. The larger the standard deviation, the larger the spread of scores will be.

Standard deviation is calculated using the following steps:

1. Add all the scores together and divide by the number of scores to calculate the mean.
2. Subtract the mean from each individual score.
3. Square each of these scores.
4. Add all the squared scores together.
5. Divided the sum of the squares by the number of scores minus 1. This is the variance.
6. Use a calculator to work out the square root of the variance. This is standard deviation.

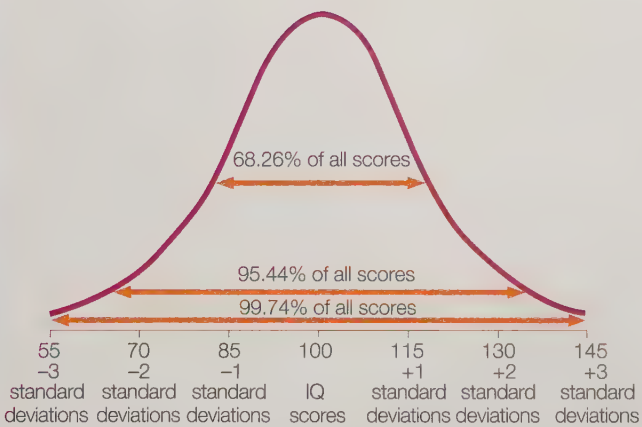


Figure 7.17 Standard deviation: IQ scores

The advantages of standard deviation are:

- It is a more sensitive dispersion measure than the range since all scores are used in its calculation.
- It allows for the interpretation of individual scores. Thus, in Figure 7.17, anybody with an IQ of 121 is in the top 5 per cent from the population, between +2 and +3 standard deviations from the mean.

The weaknesses of standard deviation are:

- It is more complicated to calculate.
- It is less meaningful if data are not normally distributed (see Figure 7.17).

Percentages

Percentages are a type of descriptive statistic that shows the rate, number or amount of something within every 100. Data shown as percentages can be plotted on a pie chart.

Data can be converted into percentages by multiplying them as a factor of 100. For example, a test score of 67 out of a total possible score of 80 would be: $\frac{67}{80} \times \frac{100}{1} = 83.75\%$

Correlational data

Correlational studies provide data that can be expressed as a correlation coefficient (see page 301), which shows either a positive correlation, negative correlation or no correlation at all. The stronger a correlation, the nearer it is to +1 or –1. Correlational data is plotted on a scattergram, which indicates strength and direction of correlation (see Figure 7.6, page 298).

Presentation of quantitative data

Quantitative data can be presented in various ways. Although emphasis is primarily on statistical analysis, data can also be presented through **tables** that summarise data to reveal findings of interest, as well as visually through **graphs** and charts, pictorial representations of data that allow viewers to more easily see patterns in data. Correlational data are presented via scattergrams, while other types of graphs exist for different types of research data.

Graphs and charts

Bar charts

Bar charts show data in the form of categories to be compared, like male and female scores concerning chocolate consumption. Categories are placed on the *x*-axis (horizontal) and the columns of bar charts should be the same width and separated by spaces. The use of spaces illustrates that the variable on the *x*-axis is not continuous (for example, males do not at some point become females and vice versa). Bar charts can show totals, means, percentages or ratios and can also display two values together, for example male and female consumption of chocolate as shown by gender and age (see Figure 7.18).

Histograms

Histograms and bar charts are somewhat similar, but the main difference is that histograms are used for continuous data, such as test scores, like the example shown in Figure 7.19. The continuous scores are placed along the *x*-axis, while the frequency of these scores is shown on the *y*-axis (vertical). There are no spaces between the bars since the data are continuous and the column width for each value on the *x*-axis should be the same width per equal category interval.

Frequency polygon (line graph)

A frequency polygon is similar to a histogram in that the data on the *x*-axes are continuous. The graph is produced by drawing a line from the mid-point top of each bar in a histogram. The advantage of a frequency polygon is that two or more frequency distributions can be compared on the same graph (see Figure 7.20).

Pie charts

Pie charts are used to show the frequency of categories as percentages. The pie is split into sections, each one of which represents the frequency

KEY TERMS

Presentation and display of quantitative data – the means by which numerical scores from a study are shown

Tables – a numerical means of presenting quantitative data

Graphs – easily understandable, pictorial representations of data

Bar charts – a type of graph for presenting non-continuous quantitative data

Histograms – a type of graph for presenting continuous quantitative data

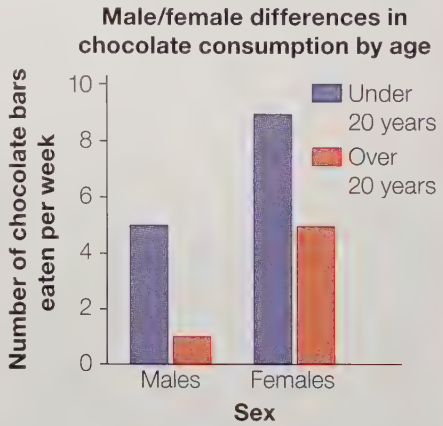


Figure 7.18 An example of a bar chart displaying two values together

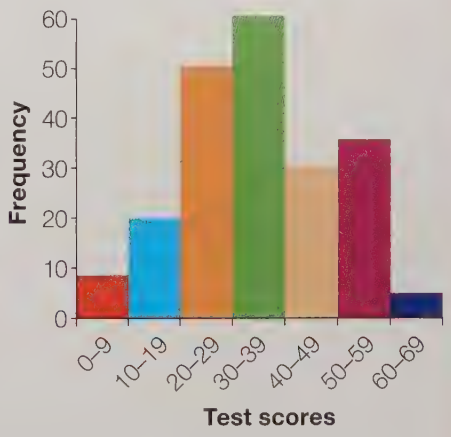


Figure 7.19 Example of a histogram

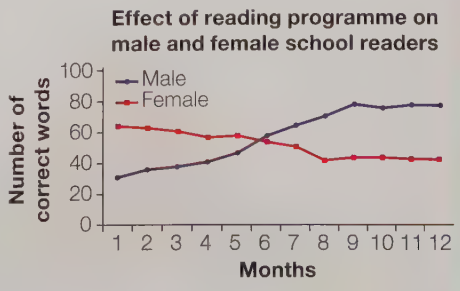


Figure 7.20 Example of a frequency polygon

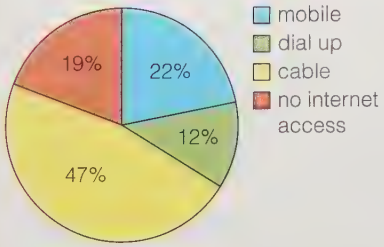


Figure 7.21 Pie chart showing different ways British people accessed the internet in 2010

of a category. The sections are colour coded, with an indication given of what each section represents and its percentage score (see Figure 7.21).

Tables

Results tables summarise the main findings of data and so differ from data tables, which just present raw, unprocessed scores (ones that haven't been subjected to statistical analysis) from research studies. It is customary with results tables to present data totals (though percentages can also be shown) and relevant measures of dispersion and central tendency (see Table 7.4 below).

Table 7.4 Male and female scores on a test of concentration

	Males	Females
Total scores	160	132
Mean	8	6.6
Range	9	13
Number of participants	20	20

ON THE WEB

A video lecture on descriptive statistics in psychology (including inferential testing, probability and Type I and II errors) with easy to follow examples can be found on YouTube by searching for 'AP Psychology Statistics Notes'.

KEY TERMS

Distributions – the different patterns in which quantitative data occur according to their values and frequency of occurrence

Normal distribution – data with an even distribution of scores either side of the mean

Skewed distribution – data that does not have an even distribution of scores either side of the mean

STRENGTHEN YOUR LEARNING

1 What is the difference between:
   (i) quantitative and qualitative data
   (ii) primary and secondary data?
2 What is meant by a meta-analysis?
3 Explain how:
   (i) content analysis works
   (ii) thematic analysis works.
4 Describe the different types of measures of central tendency and measures of dispersion and give the strengths and weaknesses of each.
5 What is:
   (i) the difference between a bar chart and a histogram
   (ii) the similarity between a histogram and a frequency polygon
   (ii) the difference between a results table and a data table?
6 When would a pie chart be used to display data?

Distributions

Normal distribution

The idea of **normal distribution** is that for a given attribute, say for example IQ scores, most scores will be on or around the mean, with decreasing amounts away from the mean. Data that is normally distributed is symmetrical, so that when plotted on a graph the data forms a bell-shaped curve with as many scores below the mean as above it (see Figure 7.22).

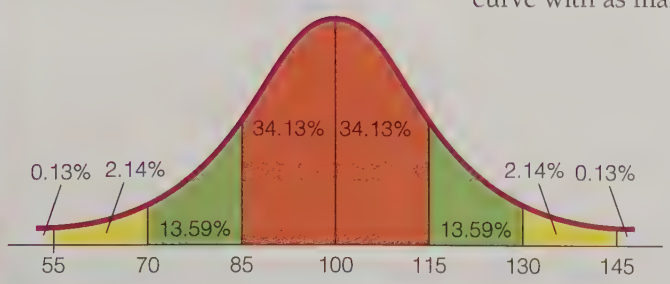


Figure 7.22 Normal distribution of IQ scores

There are several ways that data can be checked to see if it is normally distributed:

1 **Examine visually** – look at the data to see if most scores are clustered around the mean.
2 **Calculate measures of central tendency** – calculate the mean, mode and median to see if they are similar.
3 **Plot the frequency distribution** – plot the data on a histogram (see page 327) to see if it forms a bell-shaped curve.

Skewed distribution

Unless a distribution of scores is symmetrical, as in a normal distribution, it will be skewed (not have an even distribution of scores either side of the mean). Outliers (extreme 'freak' scores) can cause **skewed distributions**: a **positive skewed distribution** occurring when there is a high extreme score (or group of scores), with a **negative skewed distribution** occurring when there is a low extreme score (or scores). Therefore, a positively skewed distribution will contain more low than high scores (the skew having been produced by outlying high scores) and a negatively skewed distribution will contain more high than low scores (the skew having been produced by outlying low scores).

Bimodal distribution

A set of data can be unimodal, having just one 'peak' (see Figure 7.22), or indeed have several such peaks. For example, a **bimodal distribution** involves a set of data having two 'peaks' as two modal scores occur within the data. This usually indicates that there are two separate groups within one set of data, for instance one group of marathon runners in a race finishing in around 2 hours 30 minutes and another group finishing in around 4 hours.

Sometimes, what seems to be a bimodal distribution may actually be two unimodal (one-peaked) distributions occurring on the same axis. For instance a unimodal peak for students' test scores who didn't revise for a test and another unimodal peak for a second group of students' test scores who did revise for the test.

KEY TERMS

Positive skewed distribution – occurs when there is a high extreme score or scores

Negative skewed distribution – occurs when there is a low extreme score or scores

Bimodal distribution – where a distribution of data has two modes and thus two peaks occurring within it

Sign test – a non-parametric statistical test used for experiments where data is at least nominal and a repeated measures design has been used

Introduction to statistical testing

One method of analysing data from psychological investigations is the use of statistical tests. One such test is the **sign test**, which is used when a difference is predicted between two sets of data (such as in an experiment), the data is of at least nominal level (see Levels of measurement, page 331) and a RMD has been used. The test assesses the direction of any difference between pairs of scores

Statistical analysis produces an *observed* value, which is compared to a *critical* value in order to determine if the observed value is significant (beyond the boundaries of chance) (see Probability and significance, page 332). The sign test requires observed values to be equal to or less than the critical value to be accepted as significant, allowing the null hypothesis to be rejected (see Interpretation of significance, page 334).

A worked example of the sign test

A food manufacturer wishes to know if its new breakfast cereal 'Fizz-Buzz' will be as popular as its existing product 'Kiddy-Slop'. Ten participants try

Table 7.5 Preferences for breakfast cereals

Participant number	Preference	Direction of difference
1	Fizz-Buzz	+
2	Fizz-Buzz	+
3	No difference	Omitted
4	Kiddy-Slop	–
5	Fizz-Buzz	+
6	Fizz-Buzz	+
7	Fizz-Buzz	+
8	No difference	Omitted
9	Fizz-Buzz	+
10	Fizz-Buzz	+

both and choose which they prefer. One participant prefers the existing product, seven the new product and two like both equally.

To calculate the sign test:

- Insert the data into a table (see Table 7.5)
- Use a plus or minus sign to indicate the direction of difference for each participant.
- To calculate the *observed value* add up the number of times the less frequent sign occurs (This is *s*). This equals 1 in this case.
- Get the critical value of *s* from a critical value table. This shows the maximum value of *s* that is significant at a given level of probability. To do this you need the value of *N*, the number of pairs of scores, omitting scores with no + or – sign. In this case $N = 8$.
- Work out whether you have used a one-tailed (directional) hypothesis or a two-tailed (non-directional) hypothesis. This affects what the *cv* (critical value) will be – we'll assume here it's two-tailed.
- A significance level of $p \leq 0.05$ is normally used.
- The *cv* is found from a critical values table (see Table 7.6)

Table 7.6 The critical values of *s* in the sign test

Level of significance for a one-tailed test				
	0.05	0.025	0.01	0.005
Level of significance for a two-tailed test				
N	0.10	0.05	0.02	0.01
5	0	-	-	-
6	0	0	-	-
7	0	0	0	-
8	1	0	0	0
9	1	1	0	0
10	1	1	0	0
11	2	1	1	0
12	2	2	1	1
13	3	2	1	1
14	3	2	2	1
15	3	3	2	2
16	4	3	2	2
17	4	4	3	2
18	5	4	3	3
19	5	4	4	3
20	5	5	4	3

$N = 8$, two-tailed hypothesis, significance level $p \leq 0.05$, $cv = 0$, observed value $s = 1$
Therefore not significant, accept the null hypothesis

It might surprise you that seven preferences for one product against one preference for another product isn't a difference beyond the boundaries of chance, but is probably because the sample was too small, i.e. there weren't enough participants to show such a difference.

Analysis and interpretation of correlation

A correlational study produces a correlation coefficient: a numerical value showing the degree to which two co-variables are related. Measurements range from +1 (perfect positive correlation) to –1 (perfect negative correlation). The closer the correlation to a perfect correlation, the stronger the relationship between the two variables. If there is little correlation, the result will be near to zero (0.0).

Data from correlational studies can be analysed with both the Spearman's rho and Pearson's product moment statistical tests (see statistical tests, page 333).

7.4 Inferential testing

Research studies produce data, which in order to be made sense of, has to be analysed. As discussed previously, this can be achieved using descriptive statistics (measures of central tendency and dispersion, graphs, tables, etc.) to illustrate the data. But a more sophisticated means of analysis is the use of inferential statistical tests (**inferential testing**), which allow researchers to make inferences (informed decisions) about whether differences in data are significant ones (beyond the boundaries of chance) that can be applied to the whole target population which a sample represents.

In order to decide which statistical test to use, it needs to be decided:

1. *whether a difference or a relationship between two sets of data is being tested for*
2. *what level of measurement the data is:* there are three basic **levels of measurement**: **nominal**, **ordinal** and **interval/ratio**
3. *what design has been used:* either IGD or RMD (including MPD, as it's regarded as a type of RMD).

KEY TERMS

Inferential testing – statistical procedures that make predictions about populations from mathematical analysis of data taken from samples

Levels of measurement – the different forms by which data can occur

Nominal – data characterised by frequency of occurrence

Ordinal – data characterised by their rank order

Interval/ratio – data characterised by standard units of measurement

Levels of measurement

Nominal, ordinal and interval/ratio data are ranked in relation to one another, getting gradually more informative each time. The mnemonic NOIR (Nominal, Ordinal, Interval/Ratio) can be used to remember this order. The level of data produced by a research study affects which statistical test will be chosen.

- **Nominal data** – involves counting frequency data, for example how many days of the week were rainy or sunny? Tally charts are used to record this type of data. Nominal data is the crudest, most uninformative type of data. For example, although we might know how many days were sunny/rainy overall, nominal data doesn't show how rainy or sunny each day was hour-by-hour.
- **Ordinal data** – involves ranking data into place order, with rating scales often being used to achieve this. Ordinal data is more informative than nominal data, but still lacks being fully informative. For example, the finishing places in an athletics race, first, second, third, fourth, etc., show which athletes are better than others, but don't inform us about the distances between individual athletes. The distance between first and second may be shorter than between second and third. Similarly, one person's subjective rating of 7 may be very different to another's rating of 7.
- **Interval/ratio data** – standardised measurement units like time, weight, temperature and distance are interval/ratio measures and are the most informative and accurate form of measurement, as they use equal

ON THE WEB

A useful video explaining inferential testing and critical values can be found by searching for 'Inferential Tests, Alpha Probabilities and Critical Values'.

Figure 7.23 The finishing places in a running race, first, second, third, fourth and so on, provide an example of ordinal level data

measurement intervals, for example one second in time is the same length as any other second in time. Interval and ratio data are classed together, as they apply to the same statistical tests, but the difference between them is that interval data has an arbitrary zero point, whereas ratio data has an absolute zero point. For example, zero degrees temperature doesn't mean there's no temperature (interval data), whereas someone with zero pounds in their bank account would have no money (ratio data).

Selecting an inferential test

Once it has been determined (i) whether a difference or a relationship is being sought between two sets of data, (ii) what level of measurement has been used, and (iii) whether an IGD or a RMD has been used, the appropriate statistical test can be selected. (See Table 7.7.)

Table 7.7 Choosing an appropriate statistical test

Nature of hypothesis	Level of measurement	Type of research design	
		Independent (unrelated)	Repeated (related)
Difference	Nominal data	Chi-squared	Sign test
	Ordinal data	Mann-Whitney U test	Wilcoxon (signed-matched ranks)
	Interval data	Independent t-test	Related t-test
Correlation	Ordinal data		Spearman's rho
	Interval data		Pearson product moment

KEY TERM
Probability – the likelihood of events being determined by chance

Figure 7.24 If a coin is tossed 100 times, the expectation would be for 50 heads and 50 tails, but what ratio of heads and tails would be deemed beyond the boundaries of chance?

RESEARCH IN FOCUS

1 What statistical test would you use to analyse the data from Jenness' (1932) study of conformity (see page 5)?
You'll need to decide if a difference or a relationship was being sought, what design was used and what level of measurement was used.

2 Do the same thing for Bond & Smith (1996) (see page 10), who found a positive correlation between conformity rates and the size of the majority influence.

Probability and significance

When differences and relationships are found between sets of data it is important to determine whether such differences and relationships are significant ones, beyond the boundaries of chance.

If a coin is tossed 100 times, then by the law of averages there should be 50 heads and 50 tails. However, it might be 52 heads and 48 tails, meaning there's a difference between the two sets of data, but is it beyond the boundaries of chance? Probably not, but how is the cut-off point determined between the two sets of data being significant or insignificant? 55 heads to 45 tails? 60 to 40? This is where the idea of **probability** comes in.

Probability is denoted by the symbol *p* and concerns the degree of certainty that an observed difference or relationship between two sets of data is a real difference/relationship, or whether it has occurred by chance. It is never 100 per cent certain that such differences and relationships are real ones, i.e. beyond the boundaries of chance. This is why it's impossible to prove

something beyond all doubt, so an accepted cut-off point is needed; in psychology, and in science generally, a significance (probability) level of $p \leq 0.05$ is used. This means there's a 5 per cent possibility that an observed difference or relationship between two sets of data isn't a real difference, but that it occurred by chance factors. This is seen as an acceptable level of error.

On certain occasions a stricter level of significance may be needed, for example if testing out untried drugs or in new research areas. Then a **significance level** of $p \leq 0.01$ might be used, meaning there's a 99 per cent certainty that an observed difference/relationship is a real one, but there's still a 1per cent chance that it occurred due to chance factors. An even stricter level of $p \leq 0.001$ would mean there's a 99.9 per cent certainty of a real difference/relationship, but there's still a 0.1 per cent chance that it occurred by chance.

Type I and Type II errors

A **Type I error** occurs when a difference/relationship is wrongly accepted as a real one, i.e. beyond the boundaries of chance, because the significance level has been set too high. This means the null hypothesis is wrongly rejected. An example, would be if a pregnancy test revealed a woman to be pregnant and she wasn't. With a 5 per cent significance level this means, on average, for every 100 significant differences/relationships found, five of them will have been wrongly accepted.

A **Type II error** occurs when a difference/relationship is wrongly accepted as being insignificant, i.e. not a real difference/relationship, because the significance level has been set too low (for example, 1 per cent). This means that the null hypothesis would be wrongly rejected. An example would be if a pregnancy test revealed a woman not to be pregnant when she was.

The stricter the significance level is, the less chance there is of making a Type I error, but more chance of making a Type II error and vice versa. One way to reduce the chance of making these errors is to increase the sample size.

A 5 per cent significance level is the accepted level, as it strikes a balance between making Type 1 and Type 2 errors.

Statistical tests

- **Sign test** – used when a difference is predicted between two sets of data, the data is of at least nominal level and RMD has been used
- **Chi-squared** – used when a difference is predicted between two sets of data, the data is of at least nominal level and an IGD has been used. It's also possible to use Chi-squared as a test of association (relationship).
- **Mann-Whitney** – used when a difference is predicted between two sets of data, the data is of at least ordinal level and an IGD has been used.
- **Wilcoxon signed-matched ranks** – used when a difference is predicted to occur between two sets of data, the data is of at least ordinal level and a RMD or MPD has been used.
- **Independent (unrelated) t-test** – used when a difference is predicted between two sets of data, the data is normally distributed, the data is of interval/ratio level and an IGD has been used.
- **Repeated (related) t-test** – used when a difference is predicted between two sets of data, the data is normally distributed, the data is of interval/ratio level and a RMD or MPD has been used.

KEY TERMS

Significance levels – statistical criteria determining if observed differences/relationships are beyond the boundaries of chance

Type I errors – when a difference/relationship in a data set is accepted as a real one but in fact is not

Type II errors – when a difference/relationship in a data set is rejected, but actually does exist

Factors affecting the choice of statistical test – the various criteria by which statistical tests are selected for analysis of quantitative data

Chi-squared – a test of difference used for nominal data when an independent groups design has been used (can also be used as a test of correlation for nominal data generated from the same person or event)

Mann-Whitney – a test of difference used for ordinal data when an independent groups design has been used

Wilcoxon signed-matched ranks – a test of difference used for ordinal data when a repeated measures or matched pairs design has been used

Independent (unrelated) t-test – a test of difference used for interval data when an independent groups design has been used

Repeated (related) t-test – a test of difference used for interval data when a repeated measures or matched pairs design has been used

Spearman's rho – a test of correlation used for ordinal data generated from the same person or event

Pearson's product moment – a test of correlation used for interval data generated from the same person or event

- **Spearman's rho** – used when a relationship (correlation) is predicted between two sets of data, the data is of at least ordinal level and the data are pairs of scores from the same person or event.
- **Pearson product moment** – used when a relationship (correlation) is predicted between two sets of data, the data is normally distributed, the data is of at least interval/ratio level and the data are pairs of scores from the same person or event.

Interpretation of significance

Statistical analysis produces an observed value, which is compared to a critical value in order to determine if the observed value is significant (beyond the boundaries of chance). Critical value tables need to be referenced, taking into consideration such information as whether a hypothesis is directional or non-directional (one-tailed or two-tailed), the number of participants or participant pairs (N) used and what level of significance, for example 5 per cent, is being used.

The Mann-Whitney and Wilcoxon and sign tests require observed values to be equal to or less than the critical value to be accepted as significant, allowing the null hypothesis to be rejected. The Chi-squared, independent (unrelated) t-test, repeated (related) t-test, Spearman's rho and Pearson product moment tests require an observed value to be equal to or greater than the critical value to be accepted as significant, allowing the null hypothesis to be rejected.

Table 7.8a Critical values of chi-square for a two-tailed (non-directional) test. Chi-square is significant if it is equal to or greater than the table value

df	0.20	0.10	0.05	0.02	0.01	0.001
1	1.64	2.71	3.84	5.41	6.64	10.83
2	3.22	4.6	5.99	7.82	9.21	13.82
3	4.64	6.25	7.82	9.84	11.34	16.27
4	5.99	7.78	9.49	11.67	13.28	18.46
5	7.29	9.24	11.07	13.39	15.09	20.52
6	8.56	10.64	12.59	15.03	16.81	22.46
7	9.8	12.02	14.07	16.62	18.48	24.32
8	11.03	13.36	15.51	18.17	20.09	26.12
9	12.24	14.68	16.92	19.68	21.67	27.88
10	13.44	15.99	18.31	21.16	23.21	29.59
11	14.63	17.28	19.68	22.62	24.72	31.26
12	15.81	18.55	21.03	24.05	26.22	32.91
13	16.98	19.81	22.36	25.47	27.69	34.53
14	18.15	21.06	23.68	26.87	29.14	36.12
15	19.31	22.31	25.0	28.26	30.58	37.7
16	20.46	23.54	26.3	29.63	32.0	39.29
17	21.62	24.77	27.59	31.0	33.41	40.75
18	22.76	25.99	28.87	32.35	34.8	42.31
19	23.9	27.2	30.14	33.69	36.19	43.82
20	25.04	28.41	31.41	35.02	37.57	45.32
21	26.17	29.62	32.67	36.34	38.93	46.8
22	27.3	30.81	33.92	37.66	40.29	48.27

23	28.43	32.01	35.17	38.97	41.64	49.73
24	29.55	33.2	36.42	40.27	42.98	51.18
25	30.68	34.38	37.65	41.57	44.31	52.62
26	31.8	35.56	38.88	42.86	45.64	54.05
27	32.91	36.74	40.11	44.14	46.96	55.48
28	34.03	37.92	41.34	45.42	48.28	56.89
29	35.14	39.09	42.69	46.69	49.59	58.3
30	36.25	40.26	43.77	47.96	50.89	59.7

Table 7.8b Critical values of chi-square for a one-tailed (directional) test

df	0.10	0.05	0.025	0.01	0.005	0.0005
1	1.64	2.71	3.84	5.41	6.64	10.83

Table 7.9 Mann-Whitney: critical value table of U for a one-tailed (directional) test at p = 0.005 and two-tailed (non-directional) test at p = 0.01. Dashes indicate no decision is possible at the stated level of significance. For any N1 and N2 the observed value of U will be significant if it is equal to or less than the critical values shown

N2 \ N1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
3	–	–	–	–	–	–	–	–	0	0	0	1	1	1	2	2	2	2	3	3
4	–	–	–	–	–	0	0	1	1	2	2	3	3	4	5	5	6	6	7	8
5	–	–	–	–	0	1	1	2	3	4	5	6	7	7	8	9	10	11	12	13
6	–	–	–	0	1	2	3	4	5	6	7	9	10	11	12	13	15	16	17	18
7	–	–	–	0	1	3	4	6	7	9	10	12	13	15	16	18	19	21	22	24
8	–	–	–	1	2	4	6	7	9	11	13	15	17	18	20	22	24	26	28	30
9	–	–	0	1	3	5	7	9	11	13	16	18	20	22	24	27	29	31	33	36
10	–	–	0	2	4	6	9	11	13	16	18	21	24	26	33	31	34	37	39	42
11	–	–	0	2	5	7	10	13	16	18	21	24	27	30	39	36	39	42	45	48
12	–	–	1	3	6	9	12	15	18	21	24	27	31	34	37	41	44	47	51	54
13	–	–	1	3	7	10	13	17	20	24	27	31	34	38	42	45	49	53	56	60
14	–	–	1	4	7	11	15	18	22	26	31	34	38	42	46	50	54	58	63	67
15	–	–	2	5	8	12	16	20	24	29	34	37	42	46	51	55	60	64	69	73
16	–	–	2	5	9	13	18	22	27	31	36	41	45	50	55	60	65	70	74	79
17	–	–	2	6	10	15	19	24	29	34	39	44	49	54	60	65	70	75	81	86
18	–	–	2	6	11	16	21	26	31	37	42	47	53	58	64	70	75	81	87	92
19	–	0	3	7	12	17	22	28	33	39	45	51	56	63	69	74	81	87	93	99
20	–	0	3	8	13	18	24	30	36	42	58	54	60	67	73	79	86	92	99	105

Table 7.10 Mann-Whitney: critical value table of U for a one-tailed (directional) test at p = 0.01 and two-tailed (non-directional) test at p = 0.02. Dashes indicate no decision is possible at the stated level of significance. For any N1 and N2 the observed value of U will be significant if it is equal to or less than the critical values shown

N2 \ N1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
2	–	–	–	–	–	–	–	–	–	–	–	–	0	0	0	0	0	0	1	1
3	–	–	–	–	–	–	0	0	1	1	1	2	2	2	3	3	4	4	4	5
4	–	–	–	–	0	1	1	2	3	3	4	5	5	6	7	7	8	9	9	10

N2	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
5	–	–	–	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
6	–	–		1	2	3	4	6	7	8	9	11	12	13	15	16	18	19	20	22
7	–	–	0	1	3	4	6	7	9	11	12	14	16	17	19	21	23	24	26	28
8	–	–	0	2	4	6	7	9	11	13	15	17	20	22	24	26	28	30	32	34
9	–	–	1	3	5	7	9	11	14	16	18	21	23	26	28	31	3	36	38	40
10	–	–	1	3	6	8	11	13	16	19	22	24	27	30	33	36	38	41	44	47
11	–	–	1	4	7	9	12	15	18	2	25	28	31	34	37	41	44	47	50	53
12	–	–	2	5	8	11	14	17	21	24	28	31	35	38	42	46	49	53	56	60
13	–	0	2	5	9	12	16	20	23	27	31	35	39	43	47	51	55	59	63	67
14	–	0	2	6	10	13	17	22	26	30	34	38	43	47	51	56	60	65	69	73
15	–	0	3	7	11	15	19	24	28	33	37	42	47	51	56	61	66	70	75	80
16	–	0	3	7	12	16	21	26	31	36	41	46	51	56	61	66	71	76	82	87
17	–	0	4	8	13	18	23	28	33	38	43	49	55	60	66	71	77	82	88	93
18	–	0	4	9	14	19	24	30	36	41	47	53	59	65	70	76	82	88	94	100
19	–	1	4	9	15	20	26	32	38	44	50	56	63	69	75	82	88	94	101	107
20	–	1	5	10	16	22	28	34	40	47	53	60	67	73	80	87	93	100	107	114

Table 7.11 Mann-Whitney: critical value table of U for a one-tailed (directional) test at p = 0.025 and two-tailed (non-directional) test at p = 0.05. Dashes indicate no decision is possible at the stated level of significance. For any N1 and N2 the observed value of U will be significant if it is equal to or less than the critical values shown

N1

N2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
2	–	–	–	–	–	–	–	–	–	–	–	–	0	0	0	0	0	0	1	1
3	–	–	–	–	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8
4	–	–	–	0	1	2	3	4	4	5	6	7	8	9	10	11	11	12	13	13
5	–	–	0	1	2	3	5	6	7	8	9	11	12	13	14	15	17	18	19	20
6	–	–	0	1	3	5	6	7	8	10	11	13	14	16	17	19	21	22	25	27
7	–	–	1	3	5	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34
8	–	0	2	4	6	8	10	13	15	17	19	22	24	26	29	31	34	36	38	41
9	–	0	2	4	7	10	12	15	17	20	23	26	28	31	34	37	39	42	45	48
10	–	0	3	5	8	11	14	17	20	23	26	29	33	36	39	42	45	48	52	55
11	–	0	3	6	9	13	16	19	23	26	30	33	37	40	44	47	51	55	58	62
12	–	1	4	7	11	14	18	22	26	29	33	37	41	45	49	55	57	61	65	69
13	–	1	4	8	12	16	20	24	28	33	37	41	45	50	54	59	63	67	74	76
14	–	1	5	9	13	17	22	26	31	36	40	45	50	55	59	64	67	74	78	83
15	–	1	5	10	14	19	24	29	34	39	44	49	54	59	64	70	76	80	85	90
16	–	1	6	11	15	21	26	31	37	42	47	53	59	64	70	75	81	86	92	98
17	–	2	6	11	17	22	28	34	39	45	51	57	63	67	75	81	87	93	99	105
18	–	2	7	12	18	24	30	36	42	48	55	61	67	74	80	86	93	99	106	112
19	–	2	7	13	19	25	32	38	45	52	58	65	72	78	85	92	99	106	113	119
20	–	2	8	13	20	27	34	41	48	55	62	69	76	83	90	98	105	112	119	127

Table 7.12 Mann-Whitney: critical value table of U for a one-tailed (directional) test at p = 0.05 and two-tailed (non-directional) test at p = 0.10. Dashes indicate no decision is possible at the stated level of significance. For any N1 and N2 the observed value of U will be significant if it is equal to or less than the critical values shown

N2 \ N1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0
2	-	-	-	-	0	0	0	1	1	1	1	2	2	2	3	3	3	4	4	4
3	-	-	0	0	1	2	2	3	3	4	5	5	6	7	7	8	9	9	10	11
4	-	-	0	1	2	3	4	5	6	7	8	9	10	11	12	14	15	16	17	18
5	-	0	1	2	4	5	6	8	9	11	12	13	15	16	18	19	20	22	23	25
6	-	0	2	3	5	7	8	10	12	14	16	17	19	21	23	25	26	28	30	32
7	-	0	2	4	6	8	11	13	15	17	19	21	24	26	28	30	33	35	37	39
8	-	1	3	5	8	10	13	15	18	20	2	26	28	31	33	36	39	41	44	47-
9	-	1	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54
10	-	1	4	7	11	14	17	20	24	27	31	34	37	41	44	48	51	54	58	62
11	-	1	5	8	12	16	19	23	27	31	34	38	42	46	50	54	57	61	65	69
12	-	2	5	9	13	17	21	26	30	34	38	42	47	51	55	60	64	68	72	77
13	-	2	6	10	15	19	24	28	33	37	42	47	51	56	61	65	70	75	80	84
14	-	2	7	11	16	21	26	31	36	41	46	51	56	61	66	71	77	82	87	92
15	-	3	7	12	18	23	28	33	39	44	50	55	61	66	72	77	83	88	94	100
16	-	3	8	14	19	25	30	36	42	48	54	60	65	71	77	83	89	95	101	107
17	-	3	9	15	20	26	33	39	45	51	57	64	70	77	83	89	96	102	109	115
18	-	4	9	16	22	28	35	41	48	55	61	68	75	82	88	95	102	109	116	123
19	-	4	10	17	23	30	37	44	51	58	65	72	80	87	94	101	109	116	123	130
20	-	4	11	18	25	32	39	47	54	62	69	77	84	92	100	107	115	123	130	138

Table 7.13 Critical values of T for the Wilcoxon signed matched ranks test. Values of T that are equal to or less than the table value are significant

Level of significance	for a	two-tailed	(directional)	hypothesis
	0.10	0.05	0.02	0.01
Level of significance	**for a**	**one-tailed**	**(non-directional)**	**hypothesis**
N	0.05	0.025	0.01	0.005
5	0			
6	2	0		
7	3	2	0	
8	5	3	1	0
9	8	5	3	1
10	10	8	5	3
11	13	10	7	5
12	17	13	9	7
13	21	17	12	9
14	25	21	15	12
15	30	25	19	15
16	35	29	23	19

17	41	34	27	23
18	47	40	32	27
19	53	46	37	32
20	60	52	43	37
21	67	58	49	42
22	75	65	55	48
23	83	73	62	54
24	91	81	69	61
25	100	89	76	68

Table 7.14 Critical values table for Spearman's rank order correlation coefficient test. Values of rs that are equal to or exceed the table value are significant

Level of significance	**for a**	**two-tailed**	**(non-directional)**	**hypothesis**
	0.10	0.05	0.02	0.01
Level of significance	**for a**	**one-tailed**	**(directional)**	**hypothesis**
N	0.05	0.025	0.01	0.005
4	1.0			
5	.9	1.0	1.0	
6	.829	.886	.943	1.0
7	.714	.786	.893	.929
8	.643	.738	.833	.881
9	.6	.7	.783	.833
10	.564	.648	.745	.794
11	.536	.618	.709	.755
12	.503	.587	.671	.727
13	.484	.56	.648	.703
14	.464	.538	.622	.675
15	.443	.521	.604	.654
16	.429	.503	.582	.635
17	.414	.485	.566	.615
18	.401	.472	.55	6
19	.391	.46	.535	.584
20	.38	.447	.52	.57
21	.37	.435	.508	.556
22	.361	.425	.496	.544
23	.353	.415	.486	.532
24	.344	.406	.476	.521
25	.337	.398	.466	.511
26	.331	.39	.457	.501
27	.324	.382	.448	.491
28	.317	.375	.440	.483
29	.312	.368	.433	.475
30	.306	.362	.425	.467

Table 7.15 Critical value tables for Pearson's product moment correlation test. The P value of Pearson's product is significant if it is equal to or greater than the table value. Degrees of freedom = pairs of scores minus 2

Level of significance	for a	one-tailed	(directional)	hypothesis
	0.02	0.025	0.005	0.0005
Level of significance	**for a**	**two-tailed**	**(non-directional)**	**hypothesis**
N	0.1	0.05	0.01	0.001
4	.9	.95	.99	.999
5	.805	.878	.959	.991
6	.729	.811	.917	.974
7	.669	.754	.875	.951
8	.621	.707	.834	.925
9	.582	.666	.798	.898
10	.549	.632	.765	.872
11	.521	.602	.735	.847
12	.497	.576	.708	.823
13	.476	.553	.684	.801
14	.458	.532	.661	.78
15	.441	.514	.641	.76
16	.426	.497	.623	.742
17	.412	.482	.606	.725
18	.4	.468	.59	.708
19	.389	.456	.575	.693
20	.378	.444	.561	.679
21	.369	.433	.549	.665
22	.36	.423	.537	.652
23	.352	.413	.526	.64
24	.344	.404	.515	.629
25	.337	.396	.505	.618
26	.33	.388	.496	.607
27	.323	.381	.487	.597
28	.317	.374	.479	.588
29	.311	.367	.471	.579
30	.306	.361	.463	.57

Table 7.16 Critical value table for the T-test (independent and related t-tests). To be significant T should be equal to or greater than the table value. Degrees of freedom (df) for a related T-test = N – 1. Degrees of freedom for an independent T – test = N1 + N2 – 2

Level of significance	for a one-tailed	(directional)	hypothesis
	.1	.05	.025
Level of significance	**for a two-tailed**	**(non-directional)**	**hypothesis**
df	.2	.1	.05
1	2.0	6.314	12.706
2	1.895	2.92	4.303
3	1.644	2.353	3.182
4	1.533	2.132	2.776
5	1.487	2.015	2.571
6	1.446	1.943	2.447
7	1.41	1.895	2.365

8	1.4	1.860	2.306
9	1.389	1.833	2.262
10	1.376	1.812	2.228
11	1.368	1.796	2.201
12	1.364	1.782	2.179
13	1.358	1.771	2.16
14	1.355	1.761	2.145
15	1.349	1.753	2.131
16	1.343	1.746	2.12
17	1.338	1.74	2.110
18	1.336	1.734	2.101
19	1.334	1.729	2.093
20	1.332	1.724	2.086
21	1.328	1.721	2.08
22	1.327	1.717	2.074
23	1.325	1.714	2.069
24	1.323	1.711	2.064
25	1.321	1.708	2.06
26	1.318	1.706	2.056
27	1.316	1.703	2.052
28	1.314	1.701	2.048
29	1.312	1.699	2.045
30	1.31	1.697	2.042

STRENGTHEN YOUR LEARNING

1 What are the features of:
   (i) normal distribution
   (ii) skewed distribution?
2 Explain what is meant by inferential testing.
3 What is meant by the following levels of measurement:
   (i) nominal
   (ii) ordinal
   (iii) interval/ratio?
4 What three criteria should be considered when choosing a statistical test?
5 With reference to probability what is meant by a significant difference/relationship?
6 What are Type I and II errors and when do they occur?
7 What is meant by a critical value?

Required mathematical skills in AS and A-level psychology

The entries with purple-coloured bullet points are for A-level only.

Arithmetic and numerical computation	• Recognise and use expressions in decimal and standard form e.g. converting data into decimal form to construct a pie chart • Use ratios, fractions and percentages e.g. calculating percentages of categories in an observational study • Estimate results e.g. estimating the range for a set of data

Handling data	• Use an appropriate number of significant figures e.g. expressing a correlation coefficient to two or three figures • Find arithmetic means e.g. calculating the means in two experimental conditions • Construct and interpret frequency tables and diagrams, bar charts and histograms e.g. selecting and sketching an appropriate graph from a set of data • Understand simple probability e.g. explaining the difference between 0.05 and 0.01 levels of significance • Understand the principles of sampling as applied to scientific data e.g. explaining how to obtain a random sample • Understand the terms mean, median and mode e.g. selecting most appropriate measure of central tendency for a set of data • Use a scatter diagram to identify a correlation between two variables e.g. plotting two co-variables on a scattergram • Use a statistical test e.g. calculating a non-parametric test using data from an experiment • Make order of magnitude calculations e.g. estimating mean test score for many participants on the basis of overall total score • Distinguish between levels of measurement e.g. stating which level of measurement has been used in a study • Know the characteristics of normal and skewed distributions e.g. indicating the position of the mode from a set of scores • Select an appropriate statistical test – e.g. selecting and justifying choice of inferential test for a study • Use statistical tables to determine significance e.g. using statistical tables to state whether an observed value is significant
	• Understand measures of dispersion, including standard deviation and range e.g. explaining why standard deviation may be the most useful measure of dispersion for a set of scores • Understand the differences between qualitative and quantitative data e.g. explaining how qualitative data could be converted into quantitative data • Understand the difference between primary and secondary data e.g. stating whether data is primary or secondary data
Algebra	• Understand and use symbols e.g. stating a level of significance using the appropriate symbols • Substitute numerical values into algebraic equations using appropriate units for physical quantities e.g. inserting appropriate values from a set of data into a statistical test • Solve simple algebraic equations e.g. calculate the degrees of freedom for a statistical test
Graphs	• Translate information between graphical, numerical and algebraic forms e.g. constructing a bar chart from a set of scores • Plot two variables from experimental or other data e.g. sketching a scattergram using correlational data

Table 7.17 Algebraic and statistical symbols

Symbol	Symbol name	Symbol	Symbol name
=	Equals	Σ	Sum of
>	Greater than	U	Calculated value of Mann-Whitney U
<	Less than	r_s	Spearman rank correlation coefficient
≥	Greater than or equal to	r	Pearson correlation coefficient
≤	Less than or equal to	T	Calculated value of T (Wilcoxon signed-matched ranks test)
p	Probability	S	Calculated S (signed ranks test)
μ	Population mean	t	Calculated values of related and unrelated t-test
σ	Standard deviation	x^2 χ^2	Chi squared statistic

ASSESSMENT CHECK

1 Use the data in the table below concerning male and female scores on a test of concentration to create a suitable results table showing male and female total scores, mean scores and ranges. **[6 marks]**

Male participants	Concentration test score (out of 10.0)
1	5.0
2	6.2
3	7.3
4	8.1
5	6.3
6	4.0
7	7.1

Female participants	Concentration test score (out of 10.0)
1	5.0
2	6.2
3	7.3
4	8.1
5	6.3
6	4.0

2 State which graph would be appropriate to use with this data. Explain your answer. **[1 + 2 marks]**

3 Identify which statistical test would be used to analyse the data. **[1 mark]**

4 State three reasons for selecting this test. **[3 marks]**

5 Explain one strength and one limitation of standard deviation. **[2 + 2 marks]**

6 Explain what is meant by the following: **[2 + 2 marks]**

(i) a Type I error

(ii) a Type II error?

7 Explain why a 5 per cent significance level is the accepted level of significance in psychological research. **[2 marks]**

8 Describe the features of normal distribution. **[3 marks]**

9 Explain how primary and secondary data differ from each other. **[2 marks]**

SUMMARY

- Several research methods exist. No single method is perfect; each has strengths and weaknesses.
- The experimental method involves manipulation of an independent variable (IV) to determine its effect on a dependent variable (DV) and through the use of controlled conditions is able to establish causality.
- Observations measure behaviour occurring in naturalistic settings, though they can also be conducted under controlled conditions.
- Questionnaires are a self-report method where participants give written answers to pre-set questions.
- Interviews are a self-report method involving answering face-to-face questions.
- Correlational studies measure the strength and direction of relationships between co-variables.
- Case studies involve detailed investigation of one individual or a small group.
- Content analysis quantifies qualitative data by categorising material into coding units.
- Thematic analysis is a qualitative analytic method for identifying, analysing and reporting patterns within data.
- The scientific process involves generating and testing hypotheses upon a sample of participants.
- There are three main experimental designs: the IGD, the RMD and the MPD, each having its strengths and weaknesses.
- Research should be conducted under ethical guidelines in order to protect the health and dignity of participants.
- Reliability refers to consistency, with internal reliability concerning how consistent things are within themselves and external reliability concerning the extent to which measures are consistent with other measures of the same thing.
- Validity refers to accuracy, with internal validity focusing on whether results are due or not to the manipulation of an IV, and external validity referring to the extent to which results can be generalised to other settings.
- Replicability involves a study being able to be repeated exactly to check the validity of its results.
- Empiricism involves objectivity; where observations must be made without bias.
- Falsification involves a scientific theory being empirically testable to see if it is untrue.
- Paradigm shifts involve revolutionary shifts in scientific beliefs.
- Psychological reports involve research being written up in a conventional manner that permits replication.
- Peer review involves scrutiny of research by experts to assess its suitability for publication.
- Data analysis involves the scrutiny of research findings to assess research aims, and involves a number of techniques centred upon both quantitative and qualitative data.
- Descriptive statistics summarise data findings in terms of measures of central tendency and dispersion, as well as through graphs and tables.
- Inferential testing involves the use of statistical tests to draw conclusions applicable to whole populations from data taken from representative samples.
- Probability and significance concern the likelihood of research findings being beyond the boundaries of chance.

8 Issues and debates in psychology

Introduction

There are many perspectives and opinions to take into account in psychology and unlike some of the other sciences, there is no proof that any one of those perspectives is correct. This means that agreement is difficult to establish and because psychological ideas are interwoven with philosophy, there are areas of **debate** for which it is hard to see a resolution in the near future.

In this chapter those areas of debate will be considered in detail. There is no conclusion to the debates in question as there is no 'right' answer. For the purposes of the exam you need to be able to understand what the debate is about and present evidence to support each side.

At the end of the discussion for each debate there will be a table which reviews the topics you will have covered by the end of your second year and how they relate to the debate in question. All nine possible topics will be referred to, but you will have focused on three, so it would make sense to concentrate on understanding those. There will also be reference to the approaches and the first year content if any of it seems particularly relevant to the debate. You can use examples from anywhere in psychology in your essays, so think carefully about what you have learned, and use it!

Psychology has **issues** as well as debates. There are areas of contention about gender, culture and ethics which need to be considered. These will also be covered, with appropriate examples, in this chapter. Similarly to the debates, there will be a review of the other second year topics to see whether anything you have learned may be used to discuss these issues. You will find them referred to in the same table as the debates after the commentary on each section.

The debates that will be focused upon are:

1 Free will and determinism
2 Nature–nurture
3 Holism and reductionism
4 Idiographic and nomothetic approaches.

The issues that will be considered are:

1 Gender
2 Culture
3 Ethical implications of research.

Understanding the specification

On Paper 3 you will be asked directly about the content of this chapter. For each debate and issue you need to have an understanding of the key terms and you need to be able to apply them to the other content you have learned.

Key terms that can be asked about on the paper for each debate and issue are as follows:

- **Gender and culture**: you can be asked about androcentrism, alpha and beta bias as they are all key terms named in the specification. For culture the key terms are ethnocentrism and cultural relativism. You will also need to be able to talk about universality and bias in the context of both gender and culture.
- **Free will and determinism**: key terms are hard determinism and soft determinism, biological, environmental and psychic determinism. The specification also mentions the scientific emphasis on causal explanations.
- **Nature–nurture debate**: for this you need to know what the relative importance of heredity and environment in determining behaviour is and how it can be established. You need to understand what the interactionist approach says and its position on the debate.
- **Holism and reductionism**: this requires you to answer a question on levels of explanation in psychology and to be able to define and discuss biological reductionism and environmental (stimulus-response) reductionism.
- **Idiographic and nomothetic approaches**: with this section you need to be able to define idiographic and nomothetic and you need also to be able to give some examples of each from your other topics.
- **Ethical implications of research studies and theory**: for this section, have some examples ready! Some examples need to refer to social sensitivity as it is mentioned in the specification.

This chapter will be subdivided into these six areas and will contain definitions of the key concepts together with examples to aid understanding and to help answer any questions.

These are the basic requirements of the specification. However, other relevant material is included to provide depth and detail to your understanding.

KEY TERM

Issues and debates – aspects of psychology, often of a philosophical or conceptual nature, which affect the way in which the subject is undertaken and regarded

8.1 Gender and culture in psychology

'Wherever you find a great man, you will find a great mother or a great wife standing behind him – or so they used to say. It would be interesting to know how many great women have had great fathers and husbands behind them.'

Dorothy L. Sayers, *Gaudy Night*

Anatomically men and women are different. This will come as no surprise. However, it is often argued that they also differ psychologically. This can be in terms of cognitive development, their abilities, their personality and the amount of emotion they feel. The general public find research on sex differences fascinating and the culture we live in promotes gender difference.

KEY TERMS

Gender and culture in psychology – how issues relating to the sexes and different populations of people affect the study and understanding of psychology

Universality – where research is seen as applying equally to everyone

Gender bias – the differential treatment and presentation of males and females in psychological research and theory

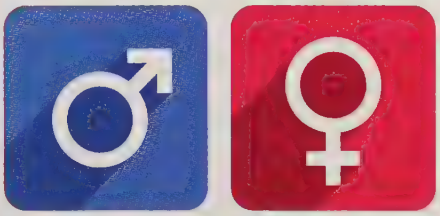


Figure 8.1 The differences between males and females are not always taken into account in psychological research

There are psychologists who argue that the idea of gender differences is much exaggerated and that the differences within genders are actually much greater than between genders.

Universality

Universality, when applied to gender as a term, means that all research is assumed to apply equally to both genders. A lot of research is very mindful of the gender perspective so some assumptions of universality are underpinned by rigorous testing across both genders. This means that biased research can occur but assumptions of universality are often well researched.

Bias

Gender, for the purposes of discussing gender bias in the topic, is the behavioural, cultural and psychological characteristics that distinguish males from females. This can be closely related to the biological sex of the individual because that label sometimes determines the gender label, and therefore all associations that come with it, from birth. This is the case for most individuals. However, there are people for whom the biological sex, and therefore gender that they are assigned, is not appropriate, e.g. those from the transgender community. These are the minority, but it should be made clear that sex does not equal gender.

There are three main ways that **gender bias** can occur:

1 **Male samples**. Research being conducted on all-male samples and this not being made clear in the subsequent report. It is also the case that some key studies in psychology have had male-only samples and yet the findings have been generalised to women. An example of this is Milgram's famous obedience study which used a male-only sample and Milgram did not hide this fact. However, the findings are used to explain all obedience to an authority figure, from both males and females.

2 **Male behaviour as standard**. If the behaviour of women differs from that of men the behaviour of women is seen as a deviation from the norm (see Androcentrism, below).

3 **Biological differences emphasis**. Explanations for behaviour that emphasise the biology of the individual also sometimes underemphasise the role of social and external factors. As there are anatomical differences between men and women, any theory that has its roots in biology is liable to implicitly imply that there will be a difference in the behaviour of the two sexes.

Androcentrism

KEY TERM

Androcentrism – a form of male bias where men's behaviour is the standard against which women's behaviour is compared

Androcentrism is the stance that the behaviour of men is taken as the norm and that the behaviour of women, if it differs, is therefore atypical. Tavris (1993) argues that most cultures take male behaviour as standard and therefore women make the decision to behave like men or different from them.

While compiling DSM-III-R, a diagnostic manual for mental health, the addition of masochistic personality disorder was proposed. For diagnosis it was argued that the individual should demonstrate behaviours such as self-sacrifice, rejecting opportunity for pleasure and playing the martyr. These could be argued to be examples of behaviours historically applied – often by men – to the 'female' role, and so the behaviour of women was pathologised. This is therefore an example of androcentrism, where a male bias informs the interpretation of female behaviour.

Alpha and beta bias

Gender bias as a term is not clearly defined. Hare-Mustin & Marecek (1988) argue that gender bias actually is split into two types, alpha and beta bias.

Alpha bias is, according to Hare-Mustin and Marecek, the attempt to exaggerate the differences between the genders. Examples of this include Freud's theory of moral development. Freud argued that women have weaker moral codes because they do not fully develop their superego. This means that their conscience and ability to stop behaviour are weaker, leaving them liable to immoral behaviour. Similarly, the socio-biological theory of mate preference states that males look for youth and attractiveness in a partner whereas females look for wealth and status, so it could be argued to overemphasise differences. This therefore could be an example of alpha bias.

Beta bias is the attempt to downplay the differences between the genders. The fight-or-flight response is documented as being universal. However, research by Lee & Harley (2012) indicates that women have a slightly different reaction and that they are more likely to 'tend and befriend', i.e. they found that women are more likely to foster social support in response to a stressful situation. It seems that the original assertion of Selye, a psychologist, that the fight-or-flight response was universal, could be beta biased.

KEY TERMS

Alpha bias – the attempt to exaggerate the differences between the genders

Beta bias – the attempt to downplay the differences between the genders

Culture

'Preservation of one's own culture does not require contempt or disrespect for other cultures.'

Cesar Chavez

Bronfenbrenner (1979, 1989) devised the ecological model to consider a child's development. His model considered the four levels at which interactions can occur:

1 **The microsystem** – this is the immediate context in which a child is involved – for example, face-to-face interaction with its mother.
2 **The mesosystem** – this is the variety of environments that a child encounters, such as school, nursery, grandparents' house and home.
3 **The exosystem** – these are the contexts which affect the child even though he/she does not go there because they interact with the child's microsystems – for example, the interaction between the child's home (mesosystem) and their parents' workplace (which they do not visit, so it is an exosystem).
4 **The macrosystem** – this is the culture in which the child grows up, for example British culture. The macrosystem or culture has a direct effect on the other systems and this section of the topic considers how this is sometimes guilty of skewing research so that there is a bias towards how research is conducted and reported. Researchers have their own macrosystem which can bias how they see the world, and this can affect their objectivity as a researcher.

Universality

There is an assumption in some research that the findings will generalise globally. This is ethnocentric bias, and as much research is carried out

in Western culture, the bias in psychology is therefore based on Western culture. However, this is not always the case. Psychological research often considers the perspectives of many cultures and as such the claim for universality can be supported by good research.

Bias

The scientific tradition of clustering people into groups and formulating laws which apply to them all has meant that **cultural bias** has occurred in psychology. Much of the research has been conducted in Western universities and as a consequence the results are really applicable to that population only. The assumption of universality from these research studies has meant that findings have been generalised globally and this is a mistake. Cultural differences should have been tested and although it has occurred in some areas, it has not in all. Some biased researchers have assumed that their culture is the norm – this is ethnocentrism.

KEY TERMS

Cultural bias – the tendency to judge and treat people in relation to one's own cultural beliefs and practices

Ethnocentrism – the assumption that one ethnic group is superior to another or all others and that the behaviour in that group is the 'norm'

Cultural relativism – the belief that it is essential to consider the cultural context when examining behaviour in that culture. There is no global right or wrong, it varies across cultures

Ethnocentrism

Ethnocentrism is the assumption that one ethnic group is superior to another, or to all other ethnic groups. It does not necessarily mean that other ethnic groups are seen in a negative light, more that their own ethnic group is normal and that others are strange and abnormal. This is similar to androcentrism in gender research.

Cultural relativism

Cultural relativism is the opinion that there is no global 'right' and 'wrong' and that it is important to consider the behaviour of the individual within their culture before making a judgement. Context is vital. Social norms are culturally relative as what is considered acceptable in one culture may be unacceptable elsewhere.

Figure 8.2 It is important to consider the cultural context of behaviour before making a judgement

Mental health disorders are affected by culture greatly. In the case of anxiety disorders culture seems to determine what situations/objects are likely to cause the anxiety or fear. For example, in Japan there is a syndrome called 'taijin kyofusho'. Sufferers have a fear of upsetting or displeasing others. They also fear blushing and refuse to make eye contact. In the UK this would be diagnosed (along with other diagnostic criteria) as a social phobia, However, in the UK this is usually a fear of embarrassment rather than the fear of upsetting others. This emphasis is culturally determined (see Table 8.1 on page 349).

Syndromes from across the world are culturally driven, such as kayak angst suffered by the Inuit people of western Greenland. The sufferer has acute anxiety about drowning or getting lost at sea. This is observed in seal hunters who often sail alone and the fear they experience is clearly linked to their environmental threats.

Table 8.1 Gender and culture in psychology in relation to other topics

Topic	How it relates to gender and cultural bias
Relationships Mate preference	The evolutionary theory of mate preference emphasises the differences between what each gender looks for in a partner. This is an example of alpha bias. Is it not possible that men and women look for similar attributes such as kindness and loyalty in their partner? Culturally there is also difference in attraction and the criteria for choosing a partner. There are cultures and sub-cultures where arranged marriages are successful and in others the emphasis is on wealth from both partners to help support the family. These criteria are far removed from the Western perspective on partner choice.
Gender Gender bias in biological theory Cultural relativism and gender schemas	There is plenty of material for gender bias within the gender topic, for example the biological theories which could be accused of alpha bias. The work on androgyny could also be accused of beta bias. Culturally the work of Margaret Mead illustrates the differences across cultures and how the Western gender stereotype does not generalise across the world.
Cognition and development Cultural bias in Vygotsky's work	From the point of view of gender there is little material to use from this section. The biological basis of mirror neurons may mean that sex differences could be emphasised, but as the research does not do this, it cannot be accused of alpha bias. Bronfenbrenner's work on the systems of the child draws attention to the influence of culture on a child's cognitive development. Vygotsky's work was seen as ethnocentric and was criticised for cultural bias. He worked in a collectivist culture and this potentially affected how he emphasised the role of the culture.
Schizophrenia Gender and cultural bias in diagnosis	The age of diagnosis varies across genders and so do symptoms presented. Is there much of a difference between genders? Could this potentially be an example of alpha bias? Culturally there is an issue with diagnosis of schizophrenia. Auditory hallucinations, seen as a symptom in the diagnostic manuals, are a sign of powers in other cultures and therefore are not indicative of mental illness in those cultures. Cultural relativism should be discussed in relation to diagnosis of schizophrenia.
Eating behaviour Cultural influences in food preference	The research on anorexia could be accused of being gynocentric (female-centred) as it is based on predominantly female subjects. This is due to the higher prevalence of anorexia in girls and women. However, there are male anorexics and it may be that the disorder has a different root in men. Cultural differences in food preference are covered in the specification and this could be used as an example of how behaviour cannot be generalised across cultures.
Stress Beta bias in physiological reactions Gender differences in coping with stress	The physiological reaction to stress is documented as being a universal behaviour. However, research has shown that there may be gender differences (fight or flight v. tend or befriend, see above). This can therefore be used as an example of beta bias. The gender differences in coping with stress are part of the specification – could this be used as an example of alpha bias?
Aggression MAOA gene	The shortened version of the MAOA gene is found in men and the effects on women are not known, which means the theory should not be generalised to all aggression. This gender difference is often underemphasised in reporting of research, so is beta biased. Evolutionary explanations of human aggression imply that the reasons behind aggression are cross-cultural. This is often not the case and aggression can be affected by social norms.
Forensic psychology Psychodynamic explanations of offending behaviour	The psychodynamic explanation of offending behaviour varies between men and women, with the outcome that women have a weaker moral code. This is an example of alpha bias. Defining a crime is problematic due to cultural variations. Legal systems vary across countries, so this can be used to show that cultural relativism should be applied in research.
Addiction Describing addiction – is there cultural bias?	Theories of addiction and risk factors seem to be seen as universal. However, potentially there may be gender differences, so this could be an example of beta bias. The description of addiction in Western culture is based on the diagnostic manuals, whereas addiction to substances in particular is evident across cultures. However, for some cultures, addiction to opiate derivatives, for example, is not a problem.

You could consider the androcentric research of Milgram, as his initial studies were carried out on a male sample. The cultural relativism of the definitions of abnormality would make an excellent focus for some commentary, too.

Evaluation

It is difficult to look at research through completely objective eyes as we all experience the influence of genders and cultures. However, it should be noted that the vast majority of researchers give due consideration to these matters. A recognition that bias can occur is important in ensuring the effect it can have is minimised.

There is an issue of reactivity search as the gender of the researcher can alter the outcomes of the research. This also concerns whether the researcher is from the ethnic majority or ethnic minority of the culture in which the research is conducted. This makes biases hard to avoid, although, again, an acknowledgement of this reactivity is important to ensure interpretation of the findings is as fair as possible.

STRENGTHEN YOUR LEARNING

1 Explain what is meant by universality with regards to gender.
2 What is the difference between alpha and beta bias?
3 Give an example of androcentrism in psychology.
4 Give an example of cultural bias in psychology.
5 What does the term ethnocentrism mean?
6 What does the term cultural relativism mean?
7 Give an example of cultural bias in psychological research.

8.2 Free will and determinism

KEY TERMS

Free will – the belief that individuals can exert conscious control over their thoughts and actions

Determinism – the belief that thoughts and behaviour are the result of forces beyond conscious control

The key question of this debate is: 'Are we in control of what we do?' Many people feel that they are and this supports the idea that we have **free will**. It certainly feels as though we do. However, most of the work in psychology adopts a more deterministic stance, meaning that we have less control than we feel we do. Indeed, some question the very existence of free will.

Defining the debate

'Habits of thinking need not be for ever. One of the most significant findings in psychology in the last twenty years is that individuals can choose the way they think.'

Martin Seligman (2006)

Free will

Free will is the ability to behave in the way we want. This means our actions are voluntary and we have freedom of choice. Free will in its purest form means that there are no restraints on choice from the options available. Indeed, we may decide not to choose any of the presented options. This is often how we feel.

Determinism

The opposing view to free will, **determinism**, is the idea that there is no control or choice on our course of action. Determinants of behaviour come from a combination of sources, such as biology, learning and thought (see types of determinism below). Due to years of debate, and also in part due to the progression of psychological research, determinism has altered from an extreme stance to varying degrees of determinism, hard and soft.

'Between stimulus and response there is a space. In that space is our power to choose our response. In our response lies our growth and our freedom.'

Viktor E. Frankl (1967)

Figure 8.3 Can we behave how we want, or are our actions determined?

Hard determinism and soft determinism

The stances within the debate are shown in Figure 8.4. This illustrates that **soft determinism** takes a less extreme view than **hard determinism**. Psychology is in the position that much of its theories and research suggest determinism is dominant, yet this does not feel intuitively correct. It is not how people feel, they have a sense of freedom of choice.

Free will
This is the idea that we are able to control and choose our course of action. We can make our own decisions and can act in unconstrained ways

Hard determinism
This is the view that human behaviour is determined by external forces and the actions are out of control

Soft determinism
This is the idea that behaviour is determined, but that humans also have the opportunity to exercise free will if need be. It acknowledges that determinism exists but that there is also the ability to choose in some circumstances

Figure 8.4 Hard and soft determinism

Soft determinism agrees with the idea that we have determinants to our behaviour. These can come from our biological make-up or from learning through experience. However, soft determinism does take note of the subjective feeling that we have an element of control, that we choose. It essentially says that a combination of both ideas is closer to the truth. It is also named 'compatibilism' as it does not deny either side of the debate.

Types of determinism: biological, environmental and psychic determinism

Determinism advocates the idea that our behaviour is affected by external forces out of our control. So what are those forces? There are thought to be several types of determinants of behaviour and these correspond to the approaches that advocate determinism.

KEY TERMS

Hard determinism – the viewpoint that humans have no free will, with behaviour shaped by forces beyond personal control

Soft determinism – the viewpoint that humans have a degree of free will, as behaviour is somewhat constrained by biological and environmental influences beyond personal control

Biological determinism

The origin of **biological determinism** is clear: it is any form of biological influence on the body. Examples of this can be found in the three main biological mechanisms: genetics, brain physiology and biochemistry.

The role of evolution and genetics in determining behaviour exists where there is found to be a genetic influence on behaviour. As research currently stands there is no gene identified where its existence means that a behaviour will definitely occur. Until this happens the hard determinism stance cannot be proven and a softer deterministic viewpoint has to be accepted. Potential areas where genetics may determine behaviour are, among many others, within aggression, addiction and forensic psychology.

KEY TERMS

Biological determinism – the viewpoint that behaviour originates from physiological influences alone

Environmental determinism – the viewpoint that behaviour originates from external learning experiences alone

Brain physiology is also a determinant. Areas of localisation (see page 263) indicate that there are specific areas of the brain which affect behaviour; therefore it stands to reason that if that an area is damaged, there could be an effect on behaviour which is out of the individual's control.

There is a relationship shown between biochemistry and behaviour. Examples include the dopamine hypothesis in schizophrenia and the role of testosterone in aggression. This is also out of the individual's control, although they can alter the levels through drugs so this becomes less deterministic.

Environmental determinism

Environmental determinism is the idea that our behaviour is determined by environmental influences. The work of the social psychologists in conformity and obedience illustrates that behaviour can be altered by the environment, and in those cases, the people in someone's environment.

The learning approach is most often associated with environmental determinism. This is because behaviourism in particular advocates a stimulus/response explanation to behaviour, saying that an external trigger prompts a behaviour from the individual. Watson's work actually argued that behaviourism could control behaviour on a large scale and this in itself demonstrates a hard deterministic line.

An example would be classical conditioning (see page 115) where a strong association is made between a stimulus that was previously neutral and a strong emotional response. Whenever the stimulus is presented, the strong emotional response is cued, and this is out of the individual's control. This is behaviourism in its purest form and later, more 'diluted' versions adhere to a less deterministic line.

Operant conditioning too is deterministic, as applying the law of effect means that a particular consequence will make a behaviour more likely in future. However, the 'more likely' does imply that there is an element of mediation by the individual and therefore possibly an element of free will.

This idea of interception of thought processes in mediating behaviour is adhered to by the social learning approach. This approach takes a less deterministic line as it acknowledges that reinforcement affects behaviour, but that there are cognitive processes that moderate the response, i.e. whether the person completes the action or not. For example, if the motivation is not there or they are unable to reproduce the behaviour at that time, it will not automatically occur. This is called reciprocal determinism and is a version of soft determinism (see above).

Psychic determinism

This form of determinism considers the role of the unconscious on conscious thought and how that affects behaviour. This is therefore largely a determinism advocated by the psychodynamic approach.

Freud argued that every action we take has a cause. He also argued strongly that the cause often has its origins in the unconscious. As the root cause was emitted from the unconscious mind the individual would often not be able to say how or why they had followed a course of action. This would only become apparent from psychotherapy.

This idea of **psychic determinism** means that all behaviour had relevance for understanding an individual's unconscious mind. In therapy, Freud stated that everyday behaviour is also governed by the unconscious and so therefore it also should be examined. Freudian slips – when an individual says the wrong word in conversation seemingly by accident and the word actually demonstrates what is going on in the individual's unconscious mind – are an example of unconscious forces determining everyday behaviour. For example, John F. Kennedy reportedly said that the USA should 'be the breast' and quickly corrected it to 'be the best and the brightest'. Freud would argue he had other things on his (unconscious) mind at the time! These errors in everyday life, which are said to be generated from the unconscious, are called 'parapraxes' and it is argued that they show psychic determinism at work.

KEY TERM

Psychic determinism – the viewpoint that behaviour originates from the influence of the unconscious mind

The scientific emphasis on causal explanations

'I have noticed that even people who claim everything is predetermined and that we can do nothing to change it, look before they cross the road.'

Stephen Hawking (1993)

Scientism in psychology is the use of methods from the natural sciences to find causal mechanisms for behaviour and thought. Regarding psychology as a science means that this employment of the scientific method is commonplace. To examine a psychological phenomenon a psychologist must do the following:

- They must develop a theory followed by a prediction of what might happen (hypothesis).
- Then they must use empirical methods to test that hypothesis.
- If there is shown to be a significant effect, this is considered to be an indication that there is a **causal explanation**.

KEY TERM

Causal explanations – where a change in a dependent variable is attributable to manipulation of an independent variable

This ability to argue that a behaviour is caused by a particular factor occurs throughout psychology. The idea is that if one factor changes a behaviour in an experiment when all other factors are controlled, then the original factor must be responsible for the change. This can be done only if the research is carried out in a scientifically rigorous way. It is the only way to try to establish causation.

How does the emphasis on causal explanations relate to the free will/determinism debate? Determinism is all about causation. A determinist argument must be able to show that the behaviour has been caused (determined) by something that is not within the individual's or group's control. For example, to focus on biological determinism, if a

biopsychologist argues that hormone X causes a change in behaviour Y, they will want evidence. Evidence is thought to be more persuasive if it comes from scientific experimentation. If the research shows that a presence of hormone X is related to someone showing behaviour Y, then this is strong evidence that the two are related. If behaviour Y does not occur when hormone X is not present, this also shows that the two are linked. For some, this would be scientific evidence to support causation, and with causation comes determinism. The biopsychologist would argue that hormone X determines behaviour Y.

The ability to prove this is problematic. It is rare to be able to say that X causes Y. There are always people for whom the effect does not happen. This means that there must be something else that affects whether the behaviour happens or not. Could this be free will (see Table 8.2)?

Table 8.2 Free will and determinism in relation to other topics

Topic and specific example	How it relates to free will and determinism
Relationships Evolutionary explanations for partner preferences	The evolutionary argument that our choice of partner is centred around evolutionary advantage is without doubt determinist. It is essentially arguing that we are attracted to people who offer potential to provide and care for healthy offspring and that we have no choice in that attraction. However, elements such as similarity in attitudes and complementarity would suggest we consider what life could be like with them, which suggests an element of free will. A consideration of choice of partner would make good commentary for the free will/determinism debate – how much are we in control of our partner choices?
Gender Biological and social explanations for gender dysphoria	The biological explanation for gender dysphoria is determinist, arguing that gender identity is fixed at conception. However, there are also social explanations which would suggest an element of cultural influence, and with that the idea that there may be an element of free will (although cultural and environmental influences can still be determinist). You might also want to consider social learning as having a soft determinist stance. There is an element of determinism, but the mediating cognitive factors mean that we do not blindly adhere to gender stereotyping and therefore it can be argued we have some free will. Bem's work on androgyny also supports this less deterministic stance.
Cognition and development	The innate aspects of Piaget's theories suggest that our cognition and development are determinist. There could also be a determinist drive to learn. It is hard to argue free will in this topic as most developmental thinking appears to be determined by our developmental path, innate or environmentally set.
Schizophrenia Genetic explanation for schizophrenia Cognitive behavioural therapy as a treatment for schizophrenia	Both the genetic and biochemical explanations for schizophrenia suggest that it is determined. It is hard to understand why someone would opt to adopt schizophrenic behaviours, particularly the negative symptoms. However, in terms of treating schizophrenia, while the drug therapy is deterministic, there are elements of free will in cognitive therapy, so any successes in that area would suggest that people with schizophrenia can choose to change their thinking. It is important to consider how effective the treatment is if arguing for free will playing a part.
Eating behaviour Taste aversion Genetic explanation for anorexia	Taste aversion is determinist – whether innate or learned it is beyond our control. The genetic and biological explanations for anorexia also support the determinist stance. Social learning theory, when applied to anorexia, could be argued to have an element of choice as the mediating cognitive factors are used for deciding whether a behaviour is imitated or not. This could be applied as a potential example of free will.
Stress Physiological reaction to stress v. hardiness	The fact that the autonomic nervous system prompts an automatic response is strictly determinist. However, in less life-threatening but potentially stressful situations, such as traffic jams and workplace pressure, it can be argued that we have an element of choice as to whether we see the situation as stressful or not. The fact that hardiness can be taught would suggest that we can choose to look at such situations in another way. This suggests there may be an element of free will in our perception of stress.

Aggression Genetic explanations for aggression	Much of the work on aggression, and especially the biological explanations, support a determinist stance, as if there is no choice in the way aggressive people act. The argument is that it is not all biologically determined, but that the environment determines an aggressive response, such as the situational explanation of institutional aggression. There is little to say that aggression is a choice, although one could argue that it does not feel that way.
Forensic psychology Genetic explanations for offending behaviour Anger management	This topic lends itself well to the free will/determinism debate. The idea that offenders have no choice in their actions has implications for the culpability of those actions. The explanations for offending, both biological and psychological, suggest a predominantly determinist stance, but when looking at the interventions, such as anger management and restorative justice, it could be argued that there is an element of choice in their behaviour.
Addiction Genetic vulnerability for addiction Cognitive behavioural therapy for addiction	Addiction as a topic has plenty of evidence for determinism, and the genetic vulnerability for addiction especially so. However, it is possible to argue an element of free will when considering the cognitive interventions. To change how one thinks is hard work, but the success of cognitive behavioural therapy could suggest that it is possible to choose to change one's thought processes, so maybe we have an element of free will, too?

Evaluation

- Free will is difficult to test. It is a non-physical phenomenon and so difficult to quantify and measure. As psychology is a science, the idea that something without a physical presence can affect behaviour is at odds with the discipline. This means that a resolution of the debate is not currently likely. If measurement becomes possible, psychology may be able to resolve the debate. Of course, the argument is that free will is not measurable because it does not exist.
- The idea of free will feels intuitively correct and it is this experience that means the debate continues. The subjective experience of most people is that they are in control of their own actions and behaviours. The humanistic approach also acknowledges this feeling and argues that we do have free will.

STRENGTHEN YOUR LEARNING

1. Explain what is meant by determinism in psychology.
2. Explain what is meant by free will in psychology.
3. What is the difference between hard and soft determinism?
4. Give an example of biological determinism in psychology.
5. Give an example of environmental determinism in psychology.
6. Give an example of psychic determinism in psychology.
7. What does the term 'causal explanations' mean?
8. Why is there an emphasis on scientific causal explanations in psychology?

ASSESSMENT CHECK

1 Select which two of the following statements best describe a strongly ethnocentric viewpoint. **[2 marks]**

A There is little use conducting cross-cultural research as no differences will occur

B Data from Europe can be used to explain British behaviour

C Behaviour varies vastly from culture to culture

D Work conducted in the UK may not transfer easily to explaining Australian behaviour

E Generalisations from data in Europe cannot be used to explain behaviour in Africa

2 Outline what is meant by universality in gender research. **[2 marks]**

3 Discuss one problem with the free will viewpoint and one problem with the determinist viewpoint. **[4 marks]**

8.3 Nature–nurture debate

'Genes are rarely about inevitability, especially when it comes to humans, the brain or behaviour. They're about vulnerability, propensities, tendencies.'

Robert Sapolsky (1993)

This debate asks: 'Does behaviour stem from the genetic make-up of the person or do they learn it through experience?' The extreme nature viewpoint is that our behaviour is dictated by our genetic make-up. The extreme nurture viewpoint is that we learn all our behaviour from conception onwards.

Nature

Nativism is the term used to describe a stance that agrees with the nature side of the debate. It was introduced by René Descartes (1596–1650), who suggested that the human soul, when born, is already equipped with an understanding of certain key concepts such as time.

There was no theory of genetics then, so his ideas were unsubstantiated. However, they did form the basis of the nativist point of view that we are born with predispositions and pre-programmed behaviours. The support for the nativist viewpoint today comes from the field of biology and more specifically genetics. Twin studies also offer some support.

Nurture

Empiricism is the opposing viewpoint to nativism which says that we are born without any innate mechanisms and that all we become is due to our experiences. It is therefore another term for the nurture viewpoint. The British philosopher John Locke argued that we are born a 'tabula rasa', blank slate. He proposed that it is experience that leads to the formation of the self, i.e. when the slate is written on.

The learning approaches clearly support an empiricist stance. They argue that behaviour is determined by learned experiences and so the role of the **environment** is all important.

The relative importance of heredity and environment in determining behaviour

No genetic cause of behaviour has been found so far. This means that the extreme nature viewpoint is seen as too extremist. However, there are genes related to behaviours, so the key question is the extent to which genetics affects behaviour, and also how much experience and learning account for what we do. This is a tricky issue – placing a numerical value on the contribution of nature and nurture is difficult. This is where the debate currently lies. How important is learning? Are genetics more important? How can we make that decision?

KEY TERMS

The nature–nurture debate – an assessment of the extent to which behaviour is the result of innate biological factors (nature) or environmental learning experiences (nurture)

Nativism – representative of the nature viewpoint, where behaviour and mental capacities are seen as innate rather than acquired by learning

Empiricism – representative of the nurture viewpoint, where behaviour and mental capacities are seen as acquired by learning rather than being innate

Environment – external learning experiences

Heredity – the term for something being inherited, i.e. within the genes

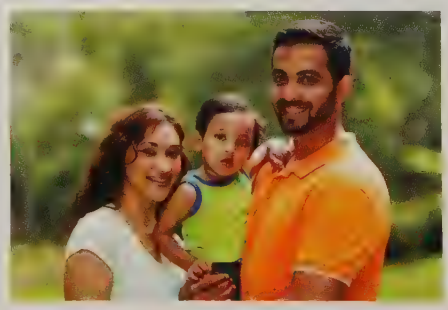


Figure 8.5 Does our behaviour stem from our genetics or our upbringing?

Twin studies

A key way that **heredity** is established is through the use of twin studies. Monozygotic (MZ or identical) twins are 100 per cent identical and so, if behaviour was dictated purely by genetics, they would act the same. As they do not, environment must have an influence.

If we compare how likely a behaviour is to occur with identical twins and non-identical twins (who are 50 per cent genetically similar), the difference in genetic similarity gives an indication of the extent of genetic influence (see In the news, below). However, the core assumption of twin studies is that the only difference between monozygotic and dizygotic (non-identical) twins is their genetic similarity level. Furnham (1996) argued that this assumption is erroneous. As monozygotic twins look the same it is possible that their parents treat them more similarly than dizygotic twins. This would mean that the environment differs between the pairs of twins and therefore any difference in likelihood of a behaviour occurring could be due to the treatment from the parents rather than the genetic similarity.

The QTL method

Plomin (1994) argues that we are too reductionist when looking for genetic explanations. The OGOD (one gene, one disorder) approach has meant that the level of genetic influence may be underestimated. If only one gene is sought, and none is found, then the role of genes interacting with each other is missed. The alternative viewpoint of how genetics affects behaviour is called QTL (quantitative trait loci), which involves the search for multiple genes. Each one of these genes in isolation cannot affect behaviour, but when combined with others the genetic influence on behaviour is greater. Work in this area has increased the potential effect of genetics and environment. Indeed, it is possible that a direct genetic link to behaviour may be found.

The heritability equation

Geneticists report to have developed a mathematical way of calculating the relative influence of genetics and environment on behaviour. The equation reports to calculate the contribution that each of the two elements makes to the variance of the behaviour (the differences in a population). The formula for this equation is $V = G + E + (G \times E)$. V is variance, G is genetic influence, E is environmental influence and $G \times E$ is the interaction between the genetics and environment.

For a discussion of this equation see In the news, below.

IN THE NEWS

Ψ The Psychological Enquirer

Genetics outweighs teaching, Gove advisor tells boss

Dominic Cummings, an advisor to Michael Gove, then Education Secretary, wrote a 250-page report to his boss stating, among other points, that an individual child's performance is mainly due to genetic influences rather than teaching. This has important implications for education policy.

He stated: 'There is strong resistance across the political spectrum to accepting scientific evidence on genetics. Most of those that now dominate discussions on issues such as social mobility entirely ignore genetics and therefore their arguments are at best misleading and often worthless.'

He used the heritability equation figure for intelligence researched by Shakeshaft *et al.* (2013) of 64 per cent of genetic influence. This figure has been contested, however. Critics have argued that the figure may be relevant to children in the middle classes, but that it probably stands at less than 10 per cent for children from poor families. It is thought that under-resourced families have a less stable environment and this means that the environment has a greater influence on their achievement.

This is an example of how assessing the relative influence of heritability and environment is fraught with problems. There are many factors to be considered and therefore finding a quantitative figure for any on behaviour or condition is very difficult. Caution should be taken in examining figures that claim to have measured the role of nature or nurture.

The interactionist approach

The **interactionist approach** takes a stance somewhere between the extreme nature and extreme nurture positions. It argues that the true answer to the nature–nurture debate is, in reality, that both genetics and the environment play a part in behaviour. It seems likely, this approach argues, that genetics gives us a predisposition to certain behaviours, the potential, if you like, to act a certain way. However, that genetic indication is moderated by the environment. The phenotype is the interaction of genetics and environment.

An excellent example of this is intelligence. The interactionist approach argues that we have a genetic predisposition to attain a certain level of intelligence and that we either reach our potential (if the environment is ideal) or we underperform due to environmental factors such as diet, poor education, brain injury, etc.

Table 8.3 shows how topics relate to the nature–nurture debate.

KEY TERM

Interactionist approach – the viewpoint that behaviour results from a combination of nature and nurture

Table 8.3 The nature–nurture debate in relation to other topics

Topic and specific example	How it relates to nature/nurture
Relationships The evolutionary explanations for human reproductive behaviour v. cultural differences	The evolutionary stance is nativist, so any evolutionary theory for mate preference is stating the importance of genetics. To combat this viewpoint, it can be argued that the cultural differences found in attractiveness globally would seem to suggest that mate preference is environmentally determined.
Gender Chromosone v. gender schema theory	There are both biological and psychological arguments for the origin of gender. These arguments can be viewed as potential examples in the nature–nurture debate. In essence, the nature side will argue that our gender is predetermined at birth by our biology whereas the nurture side of the argument is focused on environmental influences such as social learning theory.
Cognition and development Piaget v. Vygotsky	Piaget argued that the stages of development a child goes through are innate. This supports the nativist argument. However, he did acknowledge the role of the environment and that the child needed to interact with its surroundings to develop properly. This would make Piaget's viewpoint interactionist. Vygotsky, because of his emphasis on cultural influence, takes a more empiricist stance.
Schizophrenia Genetics v. family dysfunction	Genetic influences on schizophrenia support the nativists' argument as it supports the view that schizophrenia is part of an individual's genetic make-up. Theories such as family dysfunction theory, however, provide evidence for the nurture viewpoint as they stress the importance of the environment in the development of schizophrenia.
Eating behaviour Psychological explanations for anorexia nervosa: family systems theory v. biological genetic/psychological explanations for obesity	The genetic argument for anorexia nervosa is a firmly nativist stance whereas the family systems theory is focused on the environment and as such is empiricist. Theories of obesity follow a similar pattern, with the psychological explanations arguing for an environmental influence.
Stress Stress reaction v. individual perception of stress	There can be little argument that the physiological reaction to stress is an innate mechanism that has conferred us with an evolutionary advantage in a life-threatening situation. As such, as a reaction it is support for the nativist viewpoint. However, the perception of everyday stress can be argued to be empiricist. Whether the stress response is engaged or not is down to individual perception of the situation. In life-threatening situations the reaction is automatic, but in reaction to stressors in the workplace, for example, it is the individual who decides whether it is stressful to them or not. Environmental influence such as social support can mediate the reaction. This means that experience of stress is probably interactionist.
Aggression Genetic factors in aggression v. social psychological theories of aggression	Genetic influences in aggression such as the MAOA gene provide evidence for the nature side of the debate and any evidence for these factors can be used to argue that aggression is an innate drive. Conversely, the social psychological theories such as SLT and de-individuation argue for the environment being the main determinant of aggressive behaviour.
Forensic psychology Genetic explanations in offending v. psychological explanations of offending	Genetic explanations for offending behaviour are nativist arguments whereas the psychological theories such as the hostile attribution bias and cognitive distortions all suggest environmental influences. Eysenck's theory, due to its biological basis, and the psychodynamic theory with its innate drives can be argued to be interactionist, as they also acknowledge the role of the environment.
Addiction Genetic vulnerability v. other risk factors	The idea of a genetic vulnerability for addiction is nativist, but the other risk factors in addictive behaviour, such as stress, personality, family influence and peers, are very much contained in the environment. This seems to suggest an interactionist perspective overall would be appropriate.

Attachments

The theories of attachment (see Chapter 3) are ideal to refer to when considering the nature–nurture debate. Bowlby's argument is that forming attachments is an innate drive which is something we are born to do. He argued that this is an adaptive behaviour to help survival in the early years when we need care to survive. However, the learning theory is a purely empiricist stance as the theory refers to conditioning processes that are learned from the environment, with no innate input.

Evaluation

- The nature–nurture debate in recent times has moved from the argument between the extreme circumstances to the general acknowledgement that an interactionist stance is seen to be appropriate. The argument now is based on the relative influence of nature and nurture.
- Assessing the relative influence of nature and nurture is fraught with difficulties. Even using twin studies is problematic due to the assumption that the only difference between MZ and DZ twins is their genetic similarity. Parenting styles differ in that MZ twins could be treated more similarly than DZ twins. This means the difference in concordance rates could be due to nurture rather than nature.
- Research on the relative heritability of a characteristic varies greatly. This could be due to many things, such as sample size, methodology and age. Indeed, it may possibly be due to the fact that some people are more susceptible to environmental influence than others. This means that consensus is going to be hard to reach.

STRENGTHEN YOUR LEARNING

1. Explain what is meant by the term nativism in psychology.
2. Explain what is meant by the term empiricism in psychology.
3. What is the difference between the nature and the nurture stances when related to psychology?
4. What does heredity mean?
5. How can the relative importance of heredity and environment be assessed?
6. What does the term 'interactionism' mean?
7. What evidence is there to support the interactionist approach in psychology?

8.4 Holism and reductionism

The essence of this debate is to do with explaining behaviour at different levels. This will be covered in more detail below. The key focus is which level provides the best explanation of behaviour. It is often read that a

theory might be too reductionist, as if looking at a specific root cause at, for example, a biological level is a negative thing. In some behaviour it is, but it can equally be argued that in some circumstances it is more appropriate. This is illustrated in 'In the News', below.

IN THE NEWS

Ψ The Psychological Enquirer

Men with eating disorders are failed because conditions are seen as 'women's illnesses', scientists claim

This article in *The Independent* on 22 August 2014 highlighted both the growing numbers of men suffering from an eating disorder and their reluctance to seek help or recognise that they have the illness. This means that numbers could be greater than currently thought.

The research, conducted by Raisanen & Hunt (2014), comprised of interviews with ten men who suffered from an eating disorder. Two key findings were:

- Men were not as aware of the symptoms of an eating disorder, meaning that they did not realise the severity of their illness.
- Eating disorders are seen to be a 'women's illness' and so families and friends did not pick up on the fact that the men had an eating disorder until it was very serious. This misperception also means a man with an eating disorder is less likely to seek help because of the social stigma associated with what is seen as a women's problem.

The article goes on to tell the story that a man who went to see his GP about a suspected eating disorder was told to 'man up'.

This research covers a social reason for why there is an issue with diagnosing men with eating disorders and the amount of help they get initially. It would be inappropriate to look for research for this at any other level. However, the reason as to why the men have an eating disorder is different. This can be looked at from many different levels, ranging from the social pressure to be a certain body type, through the thought processes and low self-esteem to the biological level, with genetics, brain physiology and biochemistry all potentially implicated.

For a detailed look at the causes behind eating disorders see Chapter 16.

KEY TERMS

Holism – a viewpoint that sees behaviour as best understood as a whole rather than being the sum of its constituent parts

Reductionism – a viewpoint that sees behaviour as best understood by reducing it down to its constituent parts

The **holism/reductionism** debate has important implications for how psychology could develop. If a reductionist stance on the debate is taken, it will inevitably move to a greater emphasis on biological explanations. If it is rejected, then the theories and research will necessarily consider many different factors at many different levels. Like many things in psychology, the debate will probably continue to rage and a stance somewhere between the two will be navigated.

Levels of explanation in psychology

If you look at any one behaviour, there are different levels of explanation you can consider to explain it. Figure 8.6 shows the various levels available to consider a behaviour and the realms that psychology deals with. The holism/reductionism asks whether it is appropriate to look at one level specifically or whether more than one level is appropriate.

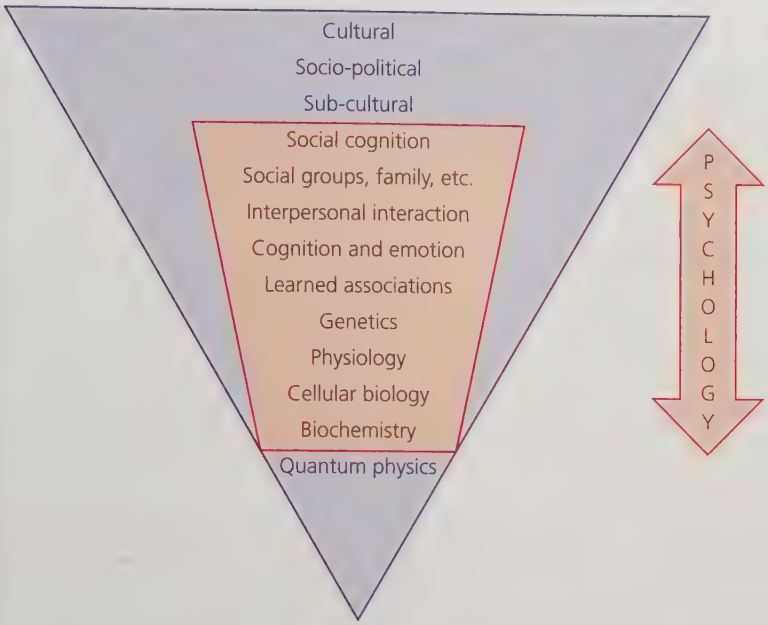


Figure 8.6 Various levels available to consider a behaviour

The levels of explanation are best illustrated using an example of behaviour: a man physically attacking someone in court who has killed his daughter.

Taking the levels of explanation most often used in the discipline of psychology, the following explanations can be suggested:

- Social cognition: the father may make a dispositional attribution that the attacker is evil and deserves to suffer for what he has done, so he responded with violence.
- Social groups, family, etc.: the father may have witnessed aggressive responses to others as a child, so he responds in a similar way.
- Interpersonal interaction: the father may have received threats from the killer in the past and this prompts him to react aggressively.
- Cognition and emotion: the father reacts with violence because of the extreme emotions of anger and grief.
- Learned associations: the father may have felt that the killer should receive physical punishment for what he has done. Or he may have reacted to an inappropriate comment or action without thinking because he is conditioned to do so.
- Genetics: the father may possess the MAOA or 'warrior' gene.
- Physiology: the father may have brain physiology that means his ability to control himself is diminished, for example frontal lobe damage.
- Cellular biology: the activity in his synapse means that his brain activity with regard to serotonin is affected. Serotonin is implicated in aggression.
- Biochemistry: he may have had alcohol in his bloodstream, which reduced his control and inhibitions.

All these are attempts to explain the behaviour, but at differing levels. Some would have more research evidence to support their suggestion than others, but no one explanation in isolation can be taken as correct, and therefore several explanations at several levels would be more appropriate.

The principle of parsimony suggested by Morgan (1903) states that there is no need to explain behaviour in terms of complex processes, and that explanations should be as simple as possible and stay within the evidence in the field of investigation. These are the explanations that may be regarded as reductionist. There are several ways in which reductionism can occur.

Biological reductionism

Biological reductionism is explaining behaviour using biological systems. This could be genetics, physiology of the body and brain, or biochemistry. It is called biological reductionism because in terms of the levels of explanation, it is as reductionist as psychology goes. If you refer to Figure 8.6 you will see that the four most reductionist levels used by psychology are biological levels.

The final four explanations for the behaviour of the father attacking his daughter's killer, when taken in isolation, are biologically reductionist. This is because they do not take into account the higher levels of explanation such as learned associations and the influence of other people.

An advantage of biological reductionism is that it is a more precise and simple explanation, which is a great deal more scientific than the ones at the higher and more general levels of explanation. An explanation that is biologically reductionist can also be tested more easily and more effectively. A desirable consequence is also that it can be used to generate an appropriate treatment, if the condition requires one.

There are issues with being too simplistic, however, and this means that biological explanations are sometimes viewed as incomplete.

KEY TERMS

Biological reductionism – the comprehension of behaviour in terms of its basic physiological components

Environmental (stimulus–response) reductionism – the comprehension of behaviour in terms of learned stimulus–response associations

Environmental (stimulus–response) reductionism

Environmental reductionism can be seen in Figure 8.6 as 'learned associations'. This is seen as reductionist because it simplifies a behaviour to a stimulus–response action. This level of explanation is advocated by behaviourist theorists. Classical conditioning is one such example. Essentially a phobia of snakes, for example, can be explained as learned through an experience such as a bite from a snake, where fear and pain are associated with the snake. When the individual then sees a snake after that experience they will avoid it as they experience a strong fearful reaction.

It is evident that this level of explanation can explain many behaviours really well, but there are some for which this is too simple. An example of this would be explaining why someone might kill, as illustrated above. The explanation for this may incorporate many different levels, with a learned association being only one of them.

The simplicity of explanations based on stimulus–response reactions means that it is easier to test the explanation. It also has the advantage of parsimony, which means that by being simple it is argued to be more effective than a complex explanation for the same behaviour. However, as with biological reductionism, the simplicity of the explanations is seen as a flaw and the explanations are inadequate for describing the complexities of human behaviour.

Holism

Holism advocates looking at the whole person rather than at one specific part to explain behaviour. People who agree with holism feel that looking at a person at a reductionist level is inadequate. They do not deny the potential influence of genetics or biochemistry but feel that human behaviour is far more complex and that it is necessary to take a step back from the detail and consider the person from a less reductionist level. The social context they are in is very important, as are family and friends in terms of influence. For this reason they are drawn to the higher levels of explanation such as social groups and social cognition.

As a consequence holism is seen as less scientific and it makes behaviour hard to predict, unlike the reductionist explanations. It does have its advantages in that it does not ignore the complexity of human behaviour.

Figure 8.7 Holism advocates looking at the whole person rather than at one specific part to explain behaviour

An interactionist perspective

The interactionist stance on the debate believes that several levels of explanation are necessary to explain behaviour ranging from the more reductionist to the more holistic. Interactionists argue that the explanations all have relevance and that, ultimately, it is difficult to establish the explanation with the best explanatory power and that this varies from situation to situation anyway. Table 8.4 shows holism and reductionism in relation to other topics.

Table 8.4 Holism and reductionism in relation to other topics

Topic	How it relates to holism/reductionism debate
Relationships	The evolutionary explanation for partner preferences is biologically reductionist because it implies there is some genetic transmission of that behaviour. This therefore argues that why someone chooses a partner is due to their biological make-up. The theories of relationship maintenance and attraction look to an interaction between two people and this is more holistic.
Gender Chromosomes and hormones v. social stereotypes	Gender provides an interesting contrast as a topic, with some explanations being very reductionist and others being holistic. The chromosomal explanation for gender, which argues that gender-typical behaviour is rooted in biology, contrasts with the gender schema and social learning theory, both of which are more holistic. These attribute gender-typical behaviour to observation of others in the environment.
Cognition and development	Vygotsky's work considers the role of the tutor in acquiring information and developing thinking, so this is quite holistic. Indeed, most of the content of this section is interactionist, such as Piaget's idea that cognition develops from innate mechanisms and discovery within an environment. It seems there could be several levels of explanation required to explain the development of thinking. The role of the mirror neuron system is probably the most reductionist explanation in the topic, arguing that there is a neural explanation for cognition.
Schizophrenia Family dysfunction v. genetics	Family dysfunction as an explanation for schizophrenia is a more holistic explanation. It considers the effect of how the family interacts on developing schizophrenia. In contrast, the genetic explanation adopts a biologically reductionist stance and in contrast to family dysfunction theory, argues that the causes of schizophrenia are at the biological level.
Eating behaviour Genetics v. family systems	The genetic explanation for anorexia is biologically reductionist. It states that the eating disorder has its origins in the genetic make-up of the individual. In contrast, family systems theory considers the home environment and interactions and can therefore be argued to be more holistic as it adopts a higher level of explanation. Contrasting these two is a good example for the debate.

Stress Cortisol v. workplace stress	Stress as a topic has content that varies greatly in how reductionist it is. The role of cortisol in stress is reductionist in that it argues a biochemical reason behind a stressful experience, whereas in contrast, the explanations of stressors such as life changes and daily hassles take a more holistic stance, considering the context that the individual is in.
Aggression Genetics v. de-individuation	As with all genetic explanations the genetic argument for the origins of aggression is a good example of biological reductionism. The idea that the MAOA gene can affect aggression is simple and focused at the chromosomal level. However, its expression seems dependent on circumstances in the environment, so perhaps this illustrates the need for consideration of other levels, which is interactionist. The theory of de-individuation considers the influence of the presence of others on the individual's propensity to be aggressive and is therefore more holistic.
Forensic psychology Genetics v. differential association theory	The genetics explanation for offender behaviour is clearly biologically reductionist as it argues that criminal behaviour is due to an individual's genetic make-up. This explanation contrasts greatly in terms of reductionism with differential association theory. This alternative explanation focuses on the higher, more holistic explanations for behaviour which concentrates on the groups of people with whom an individual interacts and their social norms. These therefore contrast with each other and would make an excellent example for the reductionism/holism debate.
Addiction Risk factors for addiction	The risk factors for addiction vary in how reductionist they are. Genetics as a risk factor is a reductionist explanation as it suggests that someone is likely to become addicted to a substance due to their genetic make-up. In contrast, the other risk factors of family influences and peers are more holistic as they consider the context around the individual and how that might influence their behaviour.

The learning approach, especially behaviourism, has plenty of examples of environmental reductionism as you can use the principles of classical and operant conditioning to illustrate what the term means. See pages 205–215.

Evaluation

- Biological reductionism can help facilitate development of a biological therapy such as drugs. These can help people suffering from mental health problems. It can also be argued that the development of drug therapy means that a sufferer has access to something which helps them feel better able to tackle the other potential factors through therapies such as psychotherapy or cognitive therapy.
- It is acknowledged by many psychologists that the likelihood that a behaviour has a purely biological route is low. The complexity involved in every behaviour means that a purely reductionist explanation is rarely accepted as sufficient.
- Reductionist explanations mean that an explanation can be tested as there are fewer factors to consider. This means that empirical work can be conducted on an explanation and this gives it academic weight.
- A reductionist explanation may mean that other explanations are ignored and underplayed. In the case of mental illness this could lead to a reoccurrence of the issue as all the factors have not been considered.

STRENGTHEN YOUR LEARNING

1. Explain what is meant by the term 'holism' in psychology.
2. Explain what is meant by the term 'reductionism' in psychology.
3. What is meant by the term 'levels of explanation' in psychology?
4. Give an example of research or theory of holism in psychology.
5. Give an example of research or theory of reductionism in psychology.
6. What does the term 'biological reductionism' mean?
7. What does the term 'environmental (stimulus–response) reductionism' mean?

ASSESSMENT CHECK

1 Select which two of the following statements best describe a viewpoint that supports the idea of nurture. **[2 marks]**

A Behaviour is a product of genetics

B Behaviour is not affected by family influences

C Behaviour is affected by peer influences

D Behaviour is an interaction between the biology of an individual and their environment

E Behaviour is a product of an individual's environment

2 Outline what is meant by biological reductionism. **[2 marks]**

3 Discuss one problem of the nature viewpoint and one problem with the nurture viewpoint. **[4 marks]**

4 17-year-old Crean is an excellent football player who has just signed for a top club. His father and one of his grandfathers were also professional footballers and Crean was taught football skills from an early age and joined a top junior side as soon as he was old enough, where he received excellent coaching.

Use your knowledge of the nature versus nurture debate to discuss why Crean is such a good football player. **[6 marks]**

5 Discuss the nature versus nurture debate. **[16 marks]**

8.5 Idiographic and nomothetic approaches to psychological investigation

'Today you are You, that is truer than true.
There is no one alive who is Youer than You.'
Ted Geisel (Dr Seuss) (1959)

KEY TERMS

Idiographic – when an explanation considers the individual and argues that generalising from person to person is difficult because of their uniqueness

Nomothetic – the idea that people can be regarded as groups and theories/explanations are therefore generalisable

This debate considers whether **idiographic** or **nomothetic** approaches to research in psychology are appropriate. This ultimately asks the question: 'Is it more important to look at the individual as unique or should you consider them as part of a group and try to establish similarities for that group?'

First it is necessary to consider the terms themselves.

Idiographic

An idiographic approach to research considers the individual. The word is derived from the Ancient Greek word 'idios', which means one's own or belonging to one's self. This shows, quite clearly, that the emphasis is on the self and on the uniqueness of the individual.

This viewpoint does not seek to generalise to others from research. Indeed, strong supporters of the idiographic stance would be unlikely to conduct large-scale studies or indeed use quantitative methods at all. They believe that an individual is unique and that they should be considered as such. It is therefore irrelevant to try to develop universal laws of behaviour.

Case studies are an illustration of an idiographic approach to research. They document the unique perspective of a person who has in some way illustrated a key behaviour or difference which can be used to help evaluate any theories in the field. Case studies are often criticised for their lack of applicability to the general population because of their uniqueness, but they are useful as a test for a theory. They cannot add much weight to support a theory, but they can show any flaws. It takes only one case study to potentially argue that a theory is wrong as a theory should be able to accommodate all individuals.

The idiographic stance also favours qualitative methods of investigation such as interviews. It traditionally opts to use methods that allow for opinion, attitude and self-reflection, such as self-report measures and qualitative sources like diaries, journals and letters.

Nomothetic

The word nomothetic is derived from the Greek term 'nomos', which can be translated as 'law'. This approach to looking at behaviour is the opposite to idiographic, as it states we are able to draw conclusions about populations of people and generalise to a wider group than the ones directly involved in research. The nomothetic stance seeks to establish general laws about behaviour that can be applied across any given population.

It is proposed that there are three types of general laws (Radford & Kirby, 1975). These are classification, establishing principles and establishing dimensions and are detailed below.

Classification

This is the idea that people can be classified into certain groups according to characteristics, attitudes or behaviour. It is also the foundation on which the diagnostic manuals for mental health are based. ICD10 and DSM-5 both attempt to diagnose people with a mental health disorder by the symptoms they present. This is an attempt at classification.

Establishing principles

This is the focus on trying to establish laws and principles that can be applied to human behaviour. Behaviourism features highly and Thorndike is known for his proposed law of effect, which is the principle that underpins operant conditioning. Theories generated under this principle are often weakened by evidence from case studies as a law requires application to all and it takes only one person to whom it does not apply to negate it.

Establishing dimensions

This is the attempt to document continuums upon which an individual can be placed. This allows comparison with others and also facilitates scientific measurement. This focus on establishing dimensions is widely used in personality research where the trait theories state we have a level of a certain trait (for example extraversion) and it is variation in the levels of those traits that influences behaviour.

The nomothetic stance means that quantitative methods of data collection and analysis are seen to be appropriate. It is also the stance taken by natural sciences. Favoured research methods are those that are more objective, such as measurement of biochemicals. The preferred choice for psychologists who adopt a more nomothetic stance is the use of laboratory conditions where variables can be carefully controlled.

The approaches are mostly nomothetic as they seek to apply research across large numbers of people. However, the humanistic approach celebrates the uniqueness of each person and for that reason is seen to be idiographic. For a comparison of the approaches with regard to this debate, see page 245.

PSYCHOLOGY IN THE REAL WORLD

'Welfare claimants to get attitude tests, employment minister reveals'

The UK government is to pilot the use of psychometric personality and attitude tests on the unemployed in three regions of the country. The idea is that the tests will highlight personality traits and attitudes that might affect whether someone actively seeks employment.

Psychometric tests are based on the idea that we all share common ground in our personalities and attitudes. By administering a test the argument is that unemployed people can be identified as needing intervention if they do not demonstrate the appropriate attitude as a job seeker. Characteristics mentioned as being of particular interest were optimism, self-confidence, self-esteem and eagerness as they would indicate that the person was more likely to have good job-seeking prospects. However, those who demonstrate despondency and apprehension would be highlighted as needing extra input to raise their job-seeking prospects.

This is a nomothetic approach to intervention, using a measure that generalises across the population. There is an argument that a more idiographic approach should be used as the circumstances faced by each individual are personal and unique, and therefore intervention should be bespoke. This, of course, makes it more costly.

Research questions

The research question asked by a researcher and the methodology used are dependent on their viewpoint on this debate. Indeed, this issue underpins much of research practice. Broadly speaking, quantitative methods are seen as nomothetic and qualitative methods are idiographic. This distinction is not clear cut, but while looking at research it is often found to be this way. An example of how the differing viewpoints affect how behaviour is seen is reflected in personality research.

Trait theories of personalities are the attempt to define personality in terms of individual traits. A current theory is the 'Big 5 personality traits'. These describe personality as five particular dimensions: openness, conscientiousness, extroversion, agreeableness and neuroticism. Table 8.5 illustrates possible sources of evidence for the idiographic /nomothetic debate within the A2 topics.

Table 8.5 Idiographic and nomothetic approaches to psychological investigation in relation to other topics

Topic	How it relates to idiographic/nomothetic debate
Relationships All theories v. individual preference	The theories of relationship formation, maintenance and breakdown all take a nomothetic stance. They generalise across people and there is no personalisation. A good example of a nomothetic approach is Duck's phase model of relationship breakdown.
Gender Psychodynamic v. theories	Gender theories are nomothetic. This includes the psychodynamic theory of gender development. Although work from this approach often has an idiographic stance, the theory of gender development is divided into male and female development and states the stages of the Oedipus and Electra complexes occur in all boys and girls. It therefore comprises aspects of both the nomothetic and idiographic approaches.
Cognition and development Theorist stages	Cognition and development is comprised of nomothetic research. The primary aim of the developmental psychologists such as Piaget, Vygotsky and Selman was to look for stages that could be generalised across all children. However, the children that do not follow the developmental stages are an argument that an idiographic stance should be adopted. Any research that does not show the stages to be consistent in terms of age or development is an argument that a less nomothetic approach may be more appropriate.
Schizophrenia Dysfunctional thought processing and biological explanations Drug therapy v. CBT	An area of this topic that lends itself to commentary on this debate is the treatment for schizophrenia. Drug therapies are developed from nomothetic research, which sees the cause of schizophrenia as rooted in the biology of those suffering with it. The biological cause is thought to be the same in all people with schizophrenia and therefore a drug treatment that addresses biochemical imbalance is appropriate. However, the cognitive behavioural therapy approach to treating schizophrenia is more idiographic and requires a therapist to listen to the patient's individual viewpoint. A comparison of effectiveness of these therapies can help you argue for which approach is the most successful and appropriate.
Eating behaviour Theories on anorexia – is there an idiographic approach? Distortions and irrational beliefs	The majority of this topic covers nomothetic theory, and the explanations for anorexia are no exception. This refers to both the biological and psychological explanations, although it can be argued that the biological explanations are purely nomothetic whereas the psychological ones, particularly the cognitive ones, are slightly more idiographic. There will be some variation within the mediating cognitive processes in social learning theory and the distortion and irrational beliefs in the cognitive explanation for each case of anorexia diagnosed. These small variations will be dependent on learned experience and therefore have an element of individuality. This makes them less nomothetic than the biological theories.
Stress Personality types	The physiological reaction to stress is clearly nomothetic as it applies to most humans. This is also the case with the personality types. Stress research is predominantly nomothetic, but where there is some application to this debate is the individual difference in perception of whether a situation is seen as stressful or not. There are factors such as how well supported the person feels (i.e. social support) that affect their reaction. This gives a slightly idiographic angle to the topic.

Aggression Media influences	All the neural, hormonal, genetic, ethological and evolutionary work on aggression has a nomothetic stance. This is also true for the psychological explanations. However, research into the effects of computer games on aggression levels is far from conclusive, so it could be argued that individuals react differently. It may be that a more idiographic viewpoint should be taken. This is the case for much of the media influence research.
Forensic psychology Eysenck v. cognitive distortions	As with many of the topics, forensic psychology is dominated by nomothetic research. The reasons behind offending behaviour, with perhaps the exception of cognitive distortions, are heavily nomothetic as they seek to explain why offenders do what they do and generalise across all offenders with those explanations. It is when considering the treatment of offenders that a more idiographic stance is adopted. Behaviour modification remains firmly nomothetic as it is applying the principles of behaviourism, but anger management is required to look at the individual circumstance of the offender and his or her thought processes, which is more idiographic. Restorative justice programmes consider the unique combination of offender and victim and therefore are more idiographic.
Addiction Drug therapy v. CBT	The treatment of addiction can be applied to this debate. Drug therapies are clearly nomothetic as they generalise a biochemical root to the addiction. The application of behaviourist principles to all in aversion therapies and other behavioural interventions is also nomothetic. However, cognitive behavioural therapy, although a generalised process, requires the individual thought processes of the addict to be listened to and moderated, which is an idiographic approach.

The biological, learning and cognitive approaches (Chapter 5, pages 199–231) can be used as examples of the nomothetic approach, as can models of memory. The attachment styles found in Ainsworth's (1970) Strange Situation research are also very nomothetic.

Humanistic approach

This approach adopts an idiographic stance and actively rejects any attempts to generalise across all humans. It does not adhere to the scientific principles that much of psychology advocates. However, it would be difficult to write about the idiographic–nomothetic debate without making reference to it.

Ethical implications of research studies and theory

An important issue within research is not the findings themselves but what should be done with the knowledge gained from that research. For example, an attention-grabbing headline can reach many people, and without considering the findings carefully people can overreact. It is necessary for the researcher to consider not just the ethics of the process but also the wide-reaching effects their research could have.

Evaluation

- Most psychology operates on a nomothetic basis as this means that patterns can be ascertained, which allows interventions to be formed that assist many people, like those with mental health problems.
- Conversely, a nomothetic stance means that theories often adopt a one-size-fits-all approach. This makes them inappropriate for some. This argument can be applied to interventions, which means that people are forced to use interventions that may have only moderate success for them.
- An idiographic stance, such as a case study, is often the seed that prompts an idea for further research. It is looking at behaviour or a phenomenon in detail from an idiographic, in-depth perspective that leads to research ideas. Inevitably, though, a nomothetic stance will be adopted at some point.

STRENGTHEN YOUR LEARNING

1 Explain what is meant by the term 'idiographic approach' in psychology.
2 Explain what is meant by the term 'nomothetic approach' in psychology.
3 Give an example of research or theory with an idiographic approach in psychology.
4 Give an example of research or theory with a nomothetic approach in psychology.

8.6 Ethical implications of research studies and theory

IN THE NEWS

Ψ The Psychological Enquirer

How I discovered I have the brain of a psychopath

James Fallon is a neuroscientist and has produced work demonstrating that an unusual pattern of low brain function in an area of the frontal lobes commonly associated with empathy and self-control is found in the brain of psychopaths. Psychopaths are not all killers, which is a common misconception, but included among psychopathic traits there is a lack of empathy, manipulation of others and self-orientation.

This work has far-reaching implications. It suggests that by scanning somebody's brain, a diagnosis of psychopathy could be made. This also then provides information that could be used to segregate and persecute those who have that brain activity pattern. This is very socially sensitive research.

The research was highlighted because of an unexpected finding Fallon reported. He states:

'At the same time I'd been studying the murderer's scans, my lab had been conducting a separate study exploring which genes, if any, are linked to Alzheimer's patients as well as several members of my family, who were serving as the normal control group.

'On this same October day, I sat down to analyse my family's scans and noticed that the last scan in the pile was strikingly odd. In fact, it looked exactly like the most abnormal of the scans I had just been writing about, suggesting that the poor individual it belonged to was a psychopath – or at least shared an uncomfortable amount of traits with one. Not suspicious of any of my family members, I naturally assumed that their scans had somehow been mixed with the other pile on the table. I generally have a lot of research going on at one time, and even though I try to keep my work organised, it was entirely possible for things to get misplaced. Unfortunately, since we were trying to keep the scans anonymous, we'd coded them to hide the names of the individuals they belonged to. To be sure I hadn't made a mistake, I asked our lab technician to break the blind code.

'When I found out who the scan belonged to, I had to believe there was a mistake. In a fit of pique, I asked the technician to check the scanner and all the notes from the other imaging and database technicians. But there was no mistake. The scan was mine.'

This highlights yet another issue with socially sensitive research, the idea that the researcher themselves, or those close to them, are in some way affected by the research. What would have happened had James Fallon discovered that the brain scan belonged to his wife, or one of his children?

Consideration of the **ethical implications** of research and theory is part of the research process. If there is no thought given to how the research process or results could affect those involved in the research process or society in general, the effects can be negative and wide reaching. The degree of social sensitivity should be considered when planning research

Social sensitivity

Social sensitivity refers to any psychological research that has wider ethical implications that impact outside of the research context. The research might affect people or groups in society.

These people/groups could be any of the following:

- The participants in the research. Their friends and families could also be affected as a consequence (see In the news: How I discovered I have the brain of a psychopath).
- The researcher(s) may also be affected. This could also mean that there is an effect in the institution for which they did the work.
- Groups potentially impacted by socially sensitive research include sub-cultures and sub-groups such as those with certain religious and political beliefs, ethnic minorities or groups with a particular sexual preference.

Consideration of the wider implications of research is an imperative and sometimes the potential effects are not considered.

There are three studies included in Table 8.6 which have socially sensitive content. The research and findings will be outlined and the effects explored (you may think of more).

KEY TERMS

Ethical implications – the consequences of conducting psychological research in unethical ways for participants and wider society

Social sensitivity – consequences of research that has ethical implications beyond that of the immediate research setting. For example, Sieber and Stanley identified four aspects in socially sensitive research that have ethical implications: the research question, the methodology, the institutional context and the interpretation and application of the findings.

Figure 8.8 It is important for psychologists to consider the ethical implications of their research, as it can have far-reaching social consequences

Table 8.6 Socially sensitive research studies

Name	Details	Potential effects
Lowney (1995)	Participant observations of a group of teenage Satanists in the USA. Lowney recorded their views on life, and their activities, which mainly consisted of a small amount of underage drinking, drug taking and listening to music. She interpreted her findings and suggested that they had become Satanists as they did not agree with the peer groups within their high school and other schools in America.	This research could have made life difficult for the participants following publication, in three ways: • Parental backlash over the behaviour of the young people involved in the study. • Condemnation from the community. • Peer exclusion as the research was directly critical of high school social groups.
Humphreys (1970)	Research into the social interactions and practices of homosexuals meeting in a public toilet for sex. Humphreys, a heterosexual, acted as a gay man and talked to his participants. He took their car number plates to check their backgrounds and used a contact he had in the police force to find out their addresses. His analysis of his findings suggested that gay stereotypes were false.	The time of the research should be considered for this research. Homosexuality was not widely accepted. There were implications for ethics due to the breach of privacy. The police were informed of the participant identity (via the number plates). There was a large amount of deception and although the research outcome was positive for the gay community, the research was invasive and sensationalised.
Raine (1996)	This research used brain scans of violent criminals to examine their level of impulse control. Raine found that there was damage in most of the brains, focused around the frontal lobe, which specialises in impulse control. Raine stated that these findings provided a method of identification of people with a predisposition to violent criminal behaviour. He suggested that children could be scanned to help find the potential violent criminals of the future.	The wide-reaching implications of this study are clear. The suggestion that children should have brain scans is problematic. What would then happen if a child was identified as having this pattern of brain activity? What does the child, their parents and society then do with that knowledge?

Brehm (1992) argued that some topics could not be studied due to their potentially sensitive nature and the potential to cause issues for participants. The example he gave was 'jealousy between partners participating in laboratory research'. Any experimental design investigating this has the potential to lead to problems within a relationship, which could cause psychological harm to the individuals involved.

The research process will alter the original intentions of the researcher when he or she considers their work. They first have to decide what they want to know and then they should consider what is doable. This will inevitably affect their aim. Finally, even if a piece of research is logistically possible, the wide-reaching ethical implications need to be considered. If the research has the potential to affect themselves, their family and friends, their participants or society in general, then the research should not be conducted, in theory. However, it is important that the potential benefits of research should also be considered. Psychologists argue that some research should be done even if there *is* the potential for harm.

An example of this is some of the work conducted in the 1960s on bystander behaviour. This work was developed following the horrific murder of a young American woman called Kitty Genovese, who was killed in front of reportedly more than 30 witnesses, though the exact number is disputed. None of the witnesses called for help and Kitty died. The media at the time asked why this might happen in an apparently civilised society and this led to research (Latané & Darley, 1968a, 1968b) to investigate how or why this could have occurred.

The research involved creating mock scenarios where help was required and participants taking part in the research were observed, to try to establish why people do not always act when needed. The scenarios such as filling a room with smoke and hearing someone having an epileptic seizure, although not real, caused distress in participants. This research contravenes current ethical guidelines. However, it was felt at the time that the knowledge that could potentially be gained from the experiment outweighed any cost to participants. Interestingly, when participants were asked whether they felt the research was justified and whether they would take part in such research again and they all replied 'yes'.

Work such as Milgram's electric shock study on obedience has caused controversy over the years for ethical reasons. Justification for conducting a study that deceives and causes harm is problematic, but the argument of the benefits to knowledge it could confer is considered to outweigh the disadvantages. There is some research that necessarily requires deception to work, and Milgram is a prime example of this.

Research is now conducted under strict ethical guidelines by ethics committees within an institution. It is their job to decide who might be affected by the research and how much they may be affected. This is always the main focus of their decision and they try to minimise risk by asking for modifications of the design. However, they have to decide if there is any potential ethical risk, and whether the knowledge gained from the research outweighs the risk involved. Table 8.7 outlines ethical implications of research studies.

Table 8.7 Ethical implications of research studies in relation to other topics

Topic	How it relates to ethical implications in research
Relationships The evolutionary explanations for human reproductive behaviour	Relationships as a topic have the potential for research that could affect participants negatively. As outlined by Brehm (1992), research that looks at potential problems in a relationship can be divisive and cause relationship breakdown. Consideration of the costs of the research against the benefits would make excellent commentary.
Gender	The effect of research into gender dysphoria is potentially socially sensitive as individuals with the disorder are already vulnerable because of the stigma they sometimes face within society. The findings of research could make that stigma worse.
Cognition and development Mirror neuron system	The work on theory of the mind has obvious implications for people diagnosed with autism and their families. There has been research that has implicated parenting style in the development of autism, but this has been refuted.
Schizophrenia Reliability and validity of diagnosis	Any research on psychopathology is potentially socially sensitive. It could affect the individual with schizophrenia, the family and society generally. If there is a misdiagnosis there may be issues with safety for the individual themselves or others.
Eating behaviour Psychological explanations for anorexia nervosa: family systems theory Genetic/Psychological explanations for obesity	Research into family systems theory for the origin of anorexia nervosa has obvious implications for the family of the person with AN. Blame for the cause may be directed at family members, so could, for example, upset parents. It could also fall on the individual with the condition, which could exacerbate the issue.
Stress Gender differences in coping with stress	The argument that women and men react differently to stress can be said to be an example of alpha bias. Is it really to be believed that women are not geared to fight or flight but instead a tend-or-befriend reaction?
Genetic factors in aggression	The work on the MAOA gene and its connection to aggression has the potential to be socially sensitive for the individual and society in general. The deterministic nature of genetics means that an individual could not be seen as culpable in a criminal act. The legal implications are also socially sensitive as violent crimes could not lead to convictions. There is the prospect of genetic engineering to avoid the gene being transmitted to the next generation.
Forensic psychology Genetic explanations in offending	Genetic explanations for offender behaviour are socially sensitive. They have implications for the individual and society. This is for the same reasons as the genetic explanations for aggression (see above in the table under 'Genetic factors in aggression').
Addiction Aversion therapy	Treatment for addiction has ethical implications. Aversion therapy can induce short-term harm, and the way that it takes control away from the individual can be seen as ethically unsound. The implication is that addicts are not capable of taking ownership of their own recovery. The genetic vulnerability research also has sensitivity for the reasons highlighted in the forensic psychology and aggression sections of this table.

The social influence research of Milgram is potentially socially sensitive because of how it could be used to ensure orders are obeyed (see Chapter 1). Genetic and neural explanations of obsessive–compulsive disorder (OCD) are also potentially socially sensitive due to their deterministic nature. The potential for genetically engineering foetuses in the future so that babies are not born with a predisposition to OCD is an implication of research which needs consideration and management (see Chapter 4).

Evaluation

- The code of ethics governed by the British Psychological Society together with university ethics boards means that ethical implications of research have to be considered if research is to be conducted. Stringent guidelines protect all people who may be involved in the process. The guidelines have become more careful as time has passed so the chances of research causing problems have been reduced.
- Sometimes it is not possible to see what the effects of research might be on the researcher, the participants and society. This makes it hard to judge. It is also not an objective decision, so there is potential for bias from within the decision makers. This means that socially sensitive research still causes problems from time to time.
- The ethical guidelines set for research permission are seen by some to be too strict. There are areas of research which could elicit helpful findings that could benefit a lot of people. However, the research cannot be conducted due to the research process potentially causing issues for the participants or the researcher. Reaching a balance is therefore problematic.

STRENGTHEN YOUR LEARNING

1. Explain what is meant by the statement 'ethical implications of research'.
2. Explain what is meant by the term 'social sensitivity' in psychology.
3. Give an example of research that is socially sensitive in psychology.
4. Give an example of a theory that is socially sensitive in psychology.

ON THE WEB

In the UK the British Psychological Society is responsible for governing the ethics of psychological research. They set the guidelines and collaborate with research institutions to ensure the ethics are adhered to. A full version of the Code of Human Research Ethics set out by the society is available here:

www.bps.org.uk/news-and-policy/bps-code-human-research-ethics-2nd-edition-2014

ASSESSMENT CHECK

1 Select which two of the following statements best describe the idiographic viewpoint. **[2 marks]**

A Theories are useful for explaining the behaviour of specific groups of people

B Everyone is unique and should be researched as such

C There are universal laws of behaviour that apply to all humans

D Qualitative research is useful in finding out what someone really feels

E Quantitative research is useful because it can ascertain statistical differences between two groups of people

2 Explain what is meant by social sensitivity in research. **[2 marks]**

3 Discuss one problem with the idiographic approach to research and one problem with the nomothetic approach to research. **[4 marks]**

4 Two researchers wish to conduct research on whether background noise affects performance on a test of general knowledge. Shelagh wants to do this using a nomothetic approach, while Pritti wants to use an idiographic approach.

Using your knowledge of nomothetic and idiographic approaches, discuss how Shelagh and Pritti could conduct the research. **[4 marks]**

5 Discuss idiographic and nomothetic approaches to psychological investigation. **[16 marks]**

SUMMARY

Gender and culture in psychology

- Universality of gender assumes that all research applies equally to both genders.
- Gender bias can occur in three ways: all-male samples, male behaviour seen as standard and an overemphasis of the biological differences.
- Androcentrism is the belief that male behaviour is the norm or the default and that female behaviour is seen as the non-typical version of behaviour.
- Alpha bias is the overestimation of differences between the behaviour of males and females and beta bias is the downplaying of differences that are found in research.
- Universality in culture is the idea that all behaviours apply equally across the world. Ethnocentrism is the assumption that the behaviour of one ethnic group is the norm. Cultural relativism is the idea that how behaviour can differ cross-culturally is considered within research.

Free will and determinism

- The free will and determinism debate is a consideration about how much control and choice we have in our behaviour.
- Hard and soft determinism differ in that hard determinism means we have no level of control whereas soft determinism states we have the opportunity to exercise free will if need be.
- Biological determinism is the idea that behaviour is dictated by our biology. Environmental determinism states that our behaviour is elicited by our environment. Psychic determinism suggests that behaviour is determined by unconscious thought processes.
- The focus of scientific proof has led to an upsurge in determinist theories as determinism is thought to be underpinned by causation.

The nature–nurture debate

- The extreme nature side of the nature–nurture debate asserts that behaviour is genetically pre-programmed, whereas the extreme nurture view believes that we are the end result of our environmental influences.
- The relative importance of heredity and environment can be ascertained, to some extent, through twin studies or the QTL (quantitative trait loci) method.
- The interactionist approach suggests the idea that both genetics and the environment influence behaviour and that neither extreme point of view is valid.

Holism and reductionism

- Holism is the idea that to explain behaviour it is necessary to look at many levels of explanation at once whereas reductionism focuses on one level of explanation.
- Biological reductionism looks to biological systems to explain behaviour, and environmental reductionism focuses on conditioned stimulus response explanations to account for behaviour.

Idiographic and nomothetic approaches

- Idiographic explanations consider the individual to be unique and so there is no point in trying to theorise across groups. Conversely, nomothetic explanations try to establish theories and laws that can be used to generalise.

Ethical implications

- When research is conducted it is vital that the ethical implications are considered. Socially sensitive research can adversely affect the researcher, their family, the participants or wider society. It is essential that careful consideration is given to the research at every stage of the process.

9 Relationships

Introduction

Romantic partnerships and friendships are our main types of **relationships**, though any situation involving interaction between individuals can be considered a form of relationship, as with colleagues at work or team mates in a sports group. The main psychological focus is upon how relationships are formed, maintained and break down.

Specific focus here will be upon:

1 The evolutionary explanation for partner preference
2 Factors affecting attraction in romantic relationships
3 Theories of romantic relationships
4 Virtual relationships in social media
5 Parasocial (one-sided) relationships.

Understanding the specification

- The specification requires a knowledge of the evolutionary explanation for partner preferences that includes the relationship between sexual selection and human reproductive behaviour.
- Factors affecting attraction in romantic relationships should include self-disclosure, physical attractiveness (including the matching hypothesis), the filter theory (including social demography) and similarity in attitudes and complementarity.
- Theories of romantic relations must include social exchange theory, equity theory and Rusbult's investment model, along with Duck's phase model of relationship breakdown, as these are specifically named.
- When studying virtual relationships in social media, students need to include self-disclosure in virtual relationships and the effects of absence of gating on the nature of virtual relationships, as again these are specifically listed.
- The study of parasocial relationships needs to focus on three areas: levels of parasocial relationships, the absorption–addiction model and the attachment theory explanation, as these are explicitly listed.

These are the basic requirements of the specification. However, other relevant material is included to provide depth and detail to your understanding.

IN THE NEWS

Ψ The Psychological Enquirer

Figure 9.1 Eternally in love: married for 72 years, Gordon and Norma died within one hour of each other

Gordon Yeager's girlfriend Norma, aged 18, graduated from high school in State Center Iowa, USA, at 10 a.m. on 26 May 1939. At 10 p.m. that night the couple got married. Always together, they went on to have a very full life working as partners in several businesses, socialising and travelling the world. At home they sat side by side in two adjoining chairs, Gordon the outgoing 'hyper' one, who could be seen in his nineties working on the roof of his house, Norma, the supporting, quieter one.

They were married for 72 years until a car accident left them in the intensive care unit of the local hospital, though all the time their concerns were only for each other's injuries. When it was realised that they would not recover, their beds were moved together so they could hold hands. Gordon stopped breathing and died at 3.38 p.m. on 19 October 2011. But the surprise came when his relatives realised his heart monitor was still functioning. The nurse explained that Gordon was picking up Norma's heartbeat through her hand. Their son Dennis exclaimed, 'Oh my gosh, Mom's heart is beating through him.' Norma died exactly one hour later, at 4.38 p.m. The couple were put in a coffin together holding hands, cremated and their ashes were buried together.

Most people would agree that Gordon and Norma married for love and enjoyed a love that lasted, but there are many factors involved in why people are attracted and form relationships with each other, whether it be for evolutionary, social exchange, equity or financial purposes. Years ago it was not uncommon for people to have penpals they never met, while now people form similar virtual relationships through the internet, with some individuals even forming parasocial (one-sided) relationships with individuals with whom they have no contact. Not everyone is as fortunate as Gordon and Norma – 42 per cent of marriages end in divorce, though 16 per cent of married couples will celebrate their 60th wedding anniversary.

Interestingly, stories like that of Gordon and Norma's death are not that unusual. Bereaved widows and widowers are 30 per cent more likely to die within six months of their partner's death than people of the same age who have not lost a partner. There is even emerging evidence, like that of Ferrer (2013), that romantic partners' heartbeats become synchronised (beat in time with each other) and that is possibly a reason why the number one cause of death for bereaved spouses is sudden cardiac death.

'Together we cast a single shadow on the wall.'
Doug Fetherling (1979)

'Maternity is a matter of fact, paternity a matter of opinion.'
American proverb

9.1 The evolutionary explanation for partner preferences

KEY TERM

Relationships – alliances of an intimate and emotional nature between two or more people

Charles Darwin (1809–1882) explained that within each animal species, including humans, there is variation, making people not identical. Part of the variation comes from differences in individuals' genes, 50 per cent inherited from each parent, but genes (strands of DNA) can also undergo

mutation, a random change affecting an individual's physiology and behaviour, which sometimes give individuals an advantage when competing for resources such as food, territories and mates. Such individuals stand more chance of surviving into adulthood and reproducing offspring who will also have the mutated gene, with the characteristic determined by the mutation becoming more widespread over time. This evolutionary process of gradual changes to our genetic make-up is known as natural selection. One important way in which evolution works to shape **human reproductive behaviour** is that of **sexual selection**.

The relationship between sexual selection and human reproductive behaviour

The evolutionary approach, also known as the **socio-biological explanation**, sees males and females as being subjected to different selective pressures, which therefore leads them to use different strategies to maximise their reproductive potentials.

Sexual dimorphism concerns the different characteristics that male and female humans possess – for example, males are generally larger and more muscular than females. Evolution explains sexual dimorphism as developing through the process of natural selection, because the evolution of different features gave an adaptive advantage – that is, it increased the chances of survival into adulthood and sexual maturity, where genes are passed to the next generation.

Sexual selection involves the natural selection of characteristics increasing reproductive success. For example, if muscularity increases a male's chances of being chosen as a mate, the characteristic becomes enhanced as a sexually selected one and over generations males will become progressively more muscular.

Reproductive success involves the production of healthy offspring, surviving to sexual maturity, the offspring reproducing themselves and differences between male and female sexual behaviour will arise, as they are subject to different selective pressures. These differences occur due to anisogamy, the difference between the nature and amount of gametes (sperm and eggs) produced.

Males produce lots of small, highly mobile sperm, about 110 million sperm per ejaculation – around enough to populate Britain twice over – and males can fertilise many females at little cost to reproductive potential. Before the advent of DNA testing, they could not be sure of paternity (that the child is theirs), so natural selection favours male behaviours maximising the number of potential pregnancies, resulting in intrasexual competition between males (where males compete for mating opportunities with females), and polygamy, where one male mates with more than one female. Therefore, a male's best strategy to heighten his chances of reproducing genes into the next generation is to have as much sex as possible with as many females as possible. Various male strategies have arisen, for instance seeking females displaying signs of fertility, such as health, youth and childbearing hips, as mating with fertile females enhances the chances of successful reproduction (see Male strategies, page 383).

Females produce a few, relatively large eggs, each one representing a sizeable reproductive investment, though she is always sure of maternity (she can be

KEY TERMS

Evolutionary explanations for partner preferences – the viewpoint that relationship choices are based upon features acted upon by natural selection to promote survival chances and thus advance one's genes into the next generation

Human reproductive behaviour – the different mating strategies used by males and females

Sexual selection – the selection of characteristics increasing reproductive success

Socio-biological explanation – a theory of relationships based on biological determinants

Figure 9.2 Males produce 110 million sperm per ejaculation – enough to populate Britain twice over

sure that the child is hers, as she has given birth to it, unlike males who may be uncertain of paternity). Females are fertile for about 25 years – ovulating one egg a month. Therefore, on average, they have about 300 opportunities to reproduce, which means females invest more of their reproductive potential than males, who can, in theory, reproduce as many as three times a day and remain fertile for longer – the oldest documented father was Nanu Ram Jogi, an Indian farmer who fathered a child at the age of 90. The oldest documented mother conceiving without hormone treatment was Dawn Brooke of Guernsey, who gave birth in 1997 aged 59 – her pregnancy was so unexpected it was believed to be cancer. Therefore, evolutionary theory suggests that females must be more selective about who they mate with, as each mating involves a sizeable part of reproduction potential compared with that of males.

Evolutionary theory argues that natural selection therefore favours female behaviours, maximising the chances of successful reproduction through various strategies, including careful mate selection, monogamy (having only one sexual partner) and high parental investment. Evolutionary theory argues that females seek males displaying genetic fitness, such as strength, status and resources, and indulge in inter-sexual competition, where females choose males from those available. Evolutionary theory also sees females as utilising practices like courtship, which help to select the best male from those available and also serve to make males invest time, effort and resources in them and in any resulting offspring, thus increasing the chances that the male will not desert and will offer more protection and resources to the female and her children (see Female strategies, page 383).

KEY TERM

Physical attractiveness – the degree to which an individual's physical characteristics are considered aesthetically pleasing or beautiful

ON THE WEB

An excellent website for an overview of attractiveness, including the role of waist-to-hip-ratio, leg length and bust size, can be found at:

www.uni-regensburg.de/Fakultaeten/phil_Fak_II/Psychologie/Psy_II/beautycheck/english/figur/figur.htm

There are even some interactive experiments about ideal body shape.

Attractiveness

Evolutionary theory sees **physical attractiveness** in females being valued by males as an indicator of health and fertility, two of the qualities needed to produce and raise children. Younger women are seen as more attractive, as they tend to be more fertile. Females are more attracted to men, often older, who have access to resources, as this indicates an ability to provide for a female and her children. Although physical attractiveness is less important, females are choosier in selecting mates, as their investment is greater. Females are also attracted to kindness in males, as it indicates a willingness to share resources.

Body symmetry and waist-to-hip ratio

Evolutionary theory argues that body symmetry and waist-to-hip ratio are forms of physical attractiveness that indicate genetic fitness, with males and females possessing near-perfect body symmetry having 2–3 times as many sexual partners as those with asymmetrical bodies. According to the theory, facial symmetry is especially seen as attractive, as it is regarded as the best predictor of body symmetry. Generally symmetry itself is not directly attractive, but other characteristics related to body symmetry, like being more dominant or having higher self-esteem, are.

The same theory argues that waist-to-hip ratio is an important aspect of female attractiveness to males, as females with a larger waist-to-hip ratio are associated with greater reproductive ability – they have 'child-bearing hips'. A small waist also suggests a woman is not carrying another man's child.

'We dream in courtship, but in wedlock wake'

Alexander Pope

Male strategies

Proponents of evolutionary theory hypothesise that several male strategies have evolved seeking to maximise opportunities for mating success, including the following:

- **Courtship rituals** – they suggest that these allow males to display genetic potential, through characteristics and resource abilities.
- **Size** – they suggest that males evolved to be bigger, which they argue demonstrates strength for success in competition against other males. Weaponry evolved in some species, for example antlers in deer.
- **Sperm competition** – here they argue that natural selection acted on males, making them more competitive by producing larger testicles, bigger ejaculations and faster-swimming sperm.
- **Mate guarding** – here they argue that from an evolutionary perspective, males are supposedly wary of other males impregnating their partner (and therefore passing their genetic information onto offspring), and of then spending resources raising another male's child. They suggest that males therefore indulge in mate guarding, where they keep an eye on and remain in close contact with female partners to prevent them mating with other males. Buss (1993) believes while men are fearful of partners being sexually unfaithful, females worry about emotional unfaithfulness, due to a fear of their partner spending resources on other females.
- **Sneak copulation** – here they argue that males may supposedly mate with females other than their partners in order to increase their chances of reproductive success. According to the theory, females are seen as being able to profit from this too, as having different fathers brings a wider genetic diversity to their children, which increases survival chances.

'To catch a husband is an art; to hold him is a job.'

Simone de Beauvoir (1949)

Female strategies

Several female strategies have evolved that maximise opportunities for mating success, including:

- **Sexy sons hypothesis** – Females select attractive males as they will produce sons with the same attractive features, increasing their sons' and thus their own reproductive fitness; the son (who shares the mother's genes) will have his father's attractive features, increasing his reproductive chances (and thus enhancing his mother's reproductive chances too, i.e. through her genes within her son).
- **Handicap hypothesis** – Zahavi (1975) believes females select males with handicaps because it advertises ability to thrive despite handicaps, demonstrating superior genetic quality. This may explain females finding males attractive who drink or take drugs in large amounts, as they are demonstrating an ability to handle toxins, a sign of genetic fitness.

- **Courtship** – females use courtship to select males on the basis of reproductive fitness, through males demonstrating strength, health and ability to provide resources. Prolonged courtship rituals also benefit females, as they make males invest time, effort and resources, increasing the chances of males not deserting after successful matings, and so investing more resources in females and their offspring. Thus the human practice of dating, with males investing resources to females.

CONTEMPORARY RESEARCH

Sex differences in jealousy: the recall of cues to sexual and emotional infidelity in personally more and less threatening context conditions – Achim Schutzwohl & Stephanie Koch (2004)

Figure 9.3 Evolutionary theory predicts differences in types of jealousy between males and females

Previous research had indicated men to be more jealous of sexual infidelity and women to be more jealous of emotional infidelity. This study tested the assertion by examining male and female decision times in deciding jealousy choice.

Aim

To test **Buss's (1992)** belief that males fear sexual infidelity more, while females fear emotional infidelity more.

Procedure

An opportunity sample of 100 male and 100 female German university students formed the sample. Experimental procedures, scenarios and response alternatives were presented on a computer screen.

Participants were presented with four scenarios involving social situations, each with a choice of two alternative responses. Only the responses to scenario four were of interest to the study.

Participants were asked to vividly imagine the scenarios before responding. Participants were told that the scenarios referred to romantic relationships they had been in, were currently in or would like to be in.

Scenario four read as follows:

'Imagine that you discover your partner formed both a deep emotional and a passionate sexual relationship with another person. Which aspect of your partner's involvement would make you more jealous?'

- The deep emotional relationship
- The passionate sexual relationship

The description of sexual and emotional infidelities was counterbalanced across participants. Choices were recorded, along with the times taken to make a decision after scenario presentation.

Findings

Both sexes reported more jealousy concerning the partner's emotional involvement, but more males (37 per cent) than females (20 per cent) selected their partner's sexual involvement as making them more jealous.

Women who selected emotional infidelity reached their decision faster than women selecting sexual infidelity.

Men who selected sexual infidelity reached their decision faster than men selecting emotional infidelity.

Conclusions

The research suggests that men who are more jealous of sexual infidelity employ less elaborate decision strategies – hence the quicker decision time, while women who are more jealous of emotional infidelity employ less elaborate decision strategies than women who are more jealous of sexual infidelity.

Men and women who choose their adaptively primary infidelity type – that is, sexual for men, emotional for women – rely on their initial response tendency suggested by their respective jealousy mechanism, whereas men and women selecting their adaptively secondary infidelity type engage in additional considerations that lead them to override their initial response tendency.

Evaluation

- Previous results from similar research, suggesting that women who select the emotional infidelity option engage in a more elaborate decision-making process than women selecting sexual infidelity, are refuted by this study.
- The study does not identify the exact nature of the decision processes undertaken, especially by men, when selecting their adaptively secondary infidelity type.

RESEARCH IN FOCUS

Schutzwohl (2004) found a significant difference between male and female jealousy and would thus have been able to accept her experimental hypothesis. However, in doing so there would be a chance of making a Type I error.

What is a Type I error and under what circumstances would it occur? Explain how a Type II error differs from a Type I error and under what circumstances it would occur.

Research

Buss (1989) tested participants from 37 cultures, finding that males prefer young, physically attractive females, while females prefer resource-rich, ambitious, industrious males, supporting the idea that gender-based ideas of attractiveness are biological in nature.

Davis (1990) performed a content analysis of personal advertisements, finding that men look for health and attractiveness, while offering wealth and resources. Females look for resources and status, while offering beauty and youth, supporting the idea of evolutionary-based gender differences in relationship formation. Additional support came from Dunbar (1995), who analysed 900 personal advertisements from four US newspapers, to find that 42 per cent of males sought youthfulness, while only 25 per cent of females did. Of males, 44 per cent sought attractiveness, while only 22 per cent of females did, supporting the socio-biological idea that males and females have different reasons for forming relationships.

Pawlowski & Dunbar (1999) examined the idea that older women do not disclose their true age in personal advertisements because men tend to judge prospective female partners on age, as it correlates with fertility. This was found to be true, especially for women aged 35–50, implying that women disguise their age in order to find high-quality partners before reproductive opportunities are ended by the menopause.

Toma *et al.* (2008), who used personal advertisements to research, found males thought it more acceptable to lie about their education and income than females, while Kurzban & Weeden (2005) found females more likely to declare their weight as less than it was. This illustrates how resource richness is seen as attractive in males, while physical attractiveness as a sign of fertility is seen as attractive in females.

Cartwright (2000) found that women with symmetrical breasts were more fertile than more asymmetrically breasted women, supporting the idea that body symmetry indicates reproductive fitness. Additional support comes from Penton-Voak *et al.* (2001), who found that females prefer males with greater facial symmetry, an indication of developmental stability that would be passed on to their sons, increasing reproductive potential.

Langlois & Roggman (1990) used computer-composite images to produce faces of varying symmetrical quality, finding a preference for symmetrical faces, faces identical in shape and form on both sides. This applied to both male and female faces. Cartwright (2000) supported this, finding that men prefer photographs of women with symmetrical faces and vice versa.

YOU ARE THE RESEARCHER

Design a study using a content analysis of personal advertisements (adverts in a newspaper where people seek relationships), to see if the evolutionary predictions that men will offer wealth and resources while seeking health and fertility and that women will offer beauty and youth while seeking resources and status are true. After locating a newspaper with personal advertisements, you will need to create coding units to categorise the qualities you are assessing. Use a random sample of the adverts available. Once you have quantified your data (by counting the number of times each quality appears within your sampled advertisements) you will need to compose a suitable graph and table to display your data in. Select and administer a suitable statistical test to see if your data are significant or not (beyond the boundaries of chance).

It seems that symmetry, which tends to be inherited, equates with fitness. Only individuals with good genes and food supplies develop perfectly symmetrical faces.

Singh (1993) used data from 50 years of beauty contest winners and *Playboy* centrefolds to assess waist-to-hip ratios of attractive women. He found that a small waist set against full hips was a consistent feature of female attractiveness, while breast size, overall body weight and physique varied over the years, suggesting that waist-to-hip ratio is an indicator of reproductive ability.

Swami & Furnham (2006) found that the optimum waist-to-hip ratio of 0.7:1 corresponds closely to supermodels, such as Anna Nicole Smith (0.69), Kate Moss (0.66) and Cindy Crawford (0.69), supporting Singh's findings.

Different studies into children born as a result of human sneak copulations have found differing figures. Peritz & Rust (1972) found a figure of only 0.03 per cent, while Ridley (1993) found a much higher 20 per cent. Simmons *et al.* (2003) gave a questionnaire on lifetime sexual behaviour to 416 Australian women and men, finding 27.9 per cent of males and 22.2 per cent of females admitted to cheating on partners, which suggests a sizeable minority of both sexes use the strategy, supporting evolutionary theory.

ON THE WEB

Take the BBC 'Lonely hearts advert' test and then read about the evolutionary science behind it at:

www.bbc.co.uk/science/humanbody/mind/surveys/lonelyhearts/index.shtml

Similarly, read about 'The language of love', an evolutionary explanation of relationships by Professor Robin Dunbar, at:

www.bbc.co.uk/science/humanbody/mind/articles/emotions/lonelyhearts.shtml

Evaluation

- Much early evidence for children born from sneak copulations is based on questionnaires and blood samples and so may not be reliable. Estimates of children born from sneak copulations also vary widely, which may be due to cultural differences, or to the types of samples used – for instance, using DNA data where males had suspicions of non-paternity is more likely to find such evidence. Evidence from supposedly monogamous species in the animal kingdom is supportive though, with Birkhead (1990) using DNA sampling to find that 8 per cent of zebra finch offspring result from females' sneaky copulations with non-partner males.
- Miller (1997) sees evolution as shaping human culture – that is, language, art, humour and music, which act as courtship displays, attracting sexual partners.
- The evolutionary explanation is oversimplified as it cannot explain long-distance romantic relationships, like those conducted over the internet.
- Diamond (1992) believes males, especially in early adulthood, use drugs and indulge in risky behaviours, like bungee jumping, to advertise their reproductive fitness in the face of adversity, providing support for the handicap hypothesis.
- Jealous, negative behaviours such as checking partners' mobile phone records, email accounts, etc. can be regarded as a modern form of mate guarding, where checks are made on partners to see whether they have been sexually/emotionally unfaithful.
- Evolutionary theorists make reference to females altering their appearance through the use of make-up and cosmetic surgery and lying about their age in order to appear younger and more fertile, and males using deceit to exaggerate their resource capabilities and feigning love in order to persuade females to mate with them, to support the idea of males and females using different strategies to maximise reproductive potential.

Aspects of evolutionary theory may now be disputable as a result of cultural and societal shifts. For example, women in Western cultures have greater financial security and employment opportunities, and this has occurred simultaneously with a rise in single women having children – according to the Office for National Statistics, 82,000 single women over the age of 30 had babies in Britain in 2006, and 25 per cent of British families are single-parent families (90 per cent are female-led). These statistics are not consistent with women needing male partners to provide for them and their offspring.

- Evolutionary theory supposedly explains female considerations around choosing partners and male competitiveness in terms of maximising reproductive potential. However, this can also be explained by gender role socialisation, though gender role socialisation itself may be driven by evolutionary forces.

Figure 9.4 According to evolutionary theory, older females may use make-up and cosmetic surgery to look younger and thus appear more fertile

YOU ARE THE RESEARCHER

Test out Pawlowski & Dunbar's claim (see Chapter 7) that women disguise their age by using personal advertisements from newspapers to see whether there is a difference in the number of women and men not stating their age (or giving an age range rather than a precise age). If the researchers are correct, more women should not state their age. You will need an equal number of male and female advertisements.

PSYCHOLOGY IN THE REAL WORLD

Figure 9.5 Can the art of seduction be learned from evolutionary theory?

One practical application of evolutionary theory of relationships concerns heterosexual men learning skills to seduce women based upon evolutionary theory. The first stage involves creating opportunities to exploit evolved cues of what women find attractive in men, such as demonstrating charm and humour, as these are seen as 'honest' signals of high mate value. Conversation and acts that stress generosity and wealth will also create a good impression. Another male strategy is to befriend an attractive woman and use her to attract other attractive females. Subsequent strategies establish comfort and trust, such as through touch and eye contact to create bonding. Then finally seduction can occur where passion towards sexual activity is created by building intimacy through shared experiences and self-disclosure.

Although such practices may seem ethically questionable, their effectiveness is supported by the comfortable living being earned by a growing number of 'pick-up coaches' who teach such skills. The success of Neil Strauss's best-selling book *The Game: Penetrating the secret society of pick-up artists* (2006) is one such example.

STRENGTHEN YOUR LEARNING

1. Explain what is meant by sexual selection.
2. Explain why physical attractiveness is valued in females.
3. Explain how body symmetry and waist-to-hip ratio can be qualities of attractiveness.
4. Outline male and female strategies to maximise opportunities for mating success.
5. Outline and evaluate Schutzwohl & Koch's (2004) study of sexual jealousy.
6. To what extent does research evidence support the evolutionary explanation of sexual selection and human reproductive behaviour?
7. What other evaluative points can be made concerning the evolutionary explanation of sexual selection and human reproductive behaviour?

'What you seek is seeking you.'
Jalal ad-Din Muhammad Rumi (1250)

9.2 Factors affecting attraction in romantic relationships

Romantic relationships first require attraction – to have a liking or desire for a particular person – and there are several factors that can influence who individuals will be attracted to.

KEY TERMS

Factors affecting attraction in romantic relationships – influences upon the desirability of potential intimate partners

Self-disclosure – the revealing of personal information about oneself to another

Self-disclosure

The idea behind **self-disclosure** is that the revealing of personal information about oneself to another individual is crucial to the development of a closer, more intimate romantic relationship. The concept believes we reveal more personal information to people we like and in turn we like people who reveal more personal information about themselves to us. Self-disclosure generally happens only when sufficient trust has been established so that individuals are relatively certain such information will not be revealed to others as a source of embarrassment.

Figure 9.6 Self-disclosure of personal information helps to build closer, more intimate relationships

Altman & Taylor (1973) believe relationships develop through gradual increases in the breadth and depth of self-disclosed information between individuals. They see disclosure of personal information by others as rewarding, as it signals their liking of us and their desire to be more intimate with us. This fits in with the idea of social exchange (see page 396), where individuals are more attracted to those who provide them with rewarding outcomes.

Ajzen (1977) sees self-disclosure more as a product of information processing, where liking someone comes from having positive perceptions of a person. Therefore people who self-disclose personal information to us are seen favourably as likeable, trustworthy and kind.

However, self-disclosure is not always seen as rewarding or as leading to having positive perceptions of those doing the disclosing and a number of factors have been identified that influence the relationship between disclosure and attraction.

1 **Appropriateness of the disclosure** – sometimes disclosing personal information is inappropriate, for example doing so on a first date may be viewed as 'over the top', indicating a person is maladjusted and lacking in social skills. Social norms (expected ways of behaviour) seem to exist as to what information is okay to reveal and in what situations/at which times.
2 **Attributions for the disclosure** – the reasons we believe a person is self-disclosing to us are important. Less attraction occurs if an individual is seen as the kind of person who discloses personal information to everyone, or is someone self-disclosing because the situation is seen as lending itself to self-disclosure. However, more attraction occurs if we believe an individual sees us as someone they especially want to disclose intimate information to.
3 **Gender differences** – women generally are seen as better communicators of and more interested in intimate information, therefore intimate self-disclosures by males may be seen as less appropriate than those by females. Alternatively, self-disclosure by a male may be seen as very rewarding by a female, as it indicates he especially wants to disclose personal information to her. Males, meanwhile, may not be used to and thus feel threatened by females self-disclosing intimate details to them.
4 **Content of the disclosure** – although generally intimate disclosures are seen favourably, disclosure of highly intimate information may be seen as inappropriate and as violating social norms, especially if a relationship is in its early stages. This could decrease attraction, as the recipient of the information may feel threatened and unsure of how to respond. Therefore attraction is generally weaker when self-disclosure is of low intimacy or high intimacy and stronger when self-disclosure is of moderate intimacy.

Research

Altman & Taylor (1973) reported that disclosing personal information in the initial stages of a relationship, such as at first encounter, was inappropriate and did not enhance attraction, as it suggested the disclosing person was maladjusted and less likeable. This was supported by Derlega & Grzelak (1979), who found that individuals who violated social rules by revealing over-intimate personal information were viewed unfavourably.

Kleinke (1979) found that individuals who were perceived as being selective about who they disclosed personal information to were seen as more attractive, as the recipients of the information felt specially chosen, supporting the idea that attribution for disclosure is an important factor in self-disclosure. This was supported by Wortman *et al.* (1976), who reported that when individuals believed they had been specially selected for intimate disclosure, they felt trusted and admired and thus rated the person disclosing favourably.

ON THE WEB

A detailed and comprehensive account of disclosure in virtual relationships by Joinson & Paine (2010) can be found at **www.york.ac.uk/res/e-society/projects/15/PRISD_report2.pdf.**

Derlega & Chaikin (1976) reported that men who disclosed personal information often violated social expectations in doing so and so were judged unfavourably. However, Dindia & Allen (1992) performed a meta-analysis to find females, more than males, regarded intimate disclosure as a development of closeness and thus judged men doing so favourably. Both studies suggest gender differences in self-disclosure, though in different ways.

Brewer & Mittelman (1980) reported that the positive impact of self-disclosure breaks down at extreme levels of intimacy, especially if it occurs between relative strangers, illustrating the importance of the content of self-disclosure as a factor influencing attraction.

Collins & Miller (1994) performed a meta-analysis to find that individuals who give intimate self-disclosure are more attractive than those who give less intimate self-disclosures and that people disclose more to those they are attracted to. Individuals also had increased attraction to those they self-disclosed to, supporting the importance of self-disclosure as a factor affecting attraction.

Kito (2010) assessed how self-disclosure affected different types of relationships in Japanese and American students, finding that self-disclosure was higher in both cultural groups in romantic relationships than in same-sex and cross-sex friendship relationships. This suggests self-disclosure is an important factor in romantic relationships and is a cross-cultural effect.

Evaluation

- Much of the research into self-disclosure does not distinguish between friendship/companionship and romantic relationships, making it difficult to assess the role of self-disclosure solely in romantic relationships. Also, research that does focus on romantic relationships often does not distinguish between different types, for example relationships that are high in passion, high in intimacy, high in commitment, etc. It may be that self-disclosure makes people more attractive mainly in relationships higher in intimacy.
- It is unlikely that attractiveness of a potential partner would be reliant purely on the level/type of self-disclosure that an individual makes. More likely is that self-disclosure would interact with other considerations, such as level of physical attractiveness, similarity of interests/attitudes, etc.
- An important factor in whether self-disclosure increases the attractiveness of potential partners is that of personality. Individuals who self-disclose intimate information above what is seen as their normal level of disclosure may be viewed as attractive, as it would be more rewarding to the recipient, who would view themselves as having been especially selected to receive such information. The personality of recipients may be important too; different individuals would have different needs for levels of intimacy in relationships and this would affect how attractive they would find intimate self-disclosures.

'Boys think girls are like books – if the cover doesn't catch their eye they won't bother to read what's inside.'

Marilyn Monroe (1955)

Physical attractiveness

Physical attractiveness plays a significant role in why an individual is initially attracted to someone – it takes time to find out about people's attitudes and values, but physical attractiveness is an immediate and accessible way for potential partners to judge each other. Individuals are not always competent in judging their own level of physical attractiveness, but generally people will agree on the physical attractiveness of a given individual, with greater agreement occurring among heterosexual men as to the attractiveness of females.

Individuals seen as physically attractive tend to create a favourable impression of possessing desirable personality characteristics, such as being trustworthy, optimistic and sociable. This is known as the Halo effect, where a general impression of someone is incorrectly formed from one characteristic. This is one reason why physically attractive people are more desired as dates or romantic partners than less physically attractive people.

Evolutionary theory (see page 381) sees common factors of physical attractiveness as including signs of genetic fitness in males, like facial symmetry and muscularity. Signs of healthy maturity are favoured too, as they suggest resource richness. Proponents of the theory also claim that in females, physical indicators of fertility are preferred, such as signs of health, like lustrous hair, and indicators of youth. However, as well as gender differences in what constitutes physical attractiveness, differences occur across cultures, over time and between individuals. Age can be a factor too, with physical attractiveness of potential romantic partners being more important to younger individuals.

Figure 9.7 Evolutionary theory suggests signs of maturity and resource richness are attractive in males, while youthful signs of fertility are seen as attractive in females

The matching hypothesis

An important consideration in physical attractiveness is that of Walster *et al.*'s (1966) **matching hypothesis**, which believes that when initiating romantic relationships individuals seek partners who are most like themselves in terms of physical attractiveness. This involves individuals assessing their own level of physical attractiveness and then focusing attention upon potential partners of perceived similar physical attractiveness, as there is seen as being less chance of being rejected. It has also been hypothesised that individuals will feel more secure in a relationship with someone of equal physical attractiveness, due to fears that a more attractive partner might be tempted to end the relationship if a more physically attractive partner became available.

KEY TERM

Matching hypothesis – the idea that individuals are attracted to people of similar perceived attractiveness

Research

Brigham (1971) found that physically attractive people are seen as having desirable personality characteristics, including being sociable, interesting, exciting and sexually warm, supporting the idea of the Halo effect, where people's whole personality is judged on the basis that they are physically attractive.

Gunnell & Ceci (2010) found that physically less attractive people are 22 per cent more likely to be convicted in courts of law and to get prison

sentences of on average 22 months longer than physically attractive people. This supports the Halo effect that physically attractive people are generally seen as more trustworthy than lesser physically attractive people.

Walster & Walster (1969) told students they had been assigned an ideal partner for a forthcoming dance event, though selections had actually been made at random. The students met up before the dance and those who had been paired up with partners of similar physical attractiveness to themselves expressed greater liking of their partners than those who had been paired up with partners of dissimilar levels of physical attractiveness. This supports the matching hypothesis.

Murstein (1972) asked participants to assess from photographs the physical attractiveness levels of genuine couples and non-genuine couples (who had been put together for the purpose of the study). It was found that the real couples were more likely to be judged as of similar levels of attractiveness to each other than the non-genuine couples, thus supporting the matching hypothesis.

Taylor *et al.* (2011) used profiles and photographs from an online dating site to assess the matching hypothesis, finding that initial attraction (assessed by whether communication was requested) was based on levels of physical attractiveness, which did not support the matching hypothesis. However, replies were more likely to be sent to individuals who were judged as of similar levels of physical attractiveness and agreements to 'communicate' were also more likely to occur among couples of similar physical attractiveness. This suggests the matching hypothesis applies more to later stages of the dating process rather than explaining initial attraction.

ON THE WEB

Watch the matching hypothesis in action as Professor Douglas Kenrick gets people in gender-neutral clothing to make partner choices based on physical attractiveness. Go to **www.youtube.com** and search for 'Attraction: The matching phenomena'.

Evaluation

- Walster *et al.*'s original matching hypothesis stated that individuals would desire to partner someone as socially desirable as themselves. However, over time the hypothesis has come to be regarded as one focused solely on levels of physical attractiveness, something it was not originally orientated towards.
- In an earlier study Walster *et al.* (1966) actually found that participants liked people who were more physically attractive and that physical attractiveness was the best indicator by both males and females of wanting to see someone again. This goes against the matching hypothesis, though when asked months later it was found that participants who actually did date their partner again were of similar levels of physical attractiveness, which supports the hypothesis.
- Although physical beauty is an important form of attractiveness, those without it can compensate through complex matching, where they may pair up with a more physically attractive partner by being attractive in other ways, such as through wealth or domestic skills.
- Evolutionary theory suggests that men value physical attractiveness more in women than women do in men, which means it is easier for men to compensate through other means for not being physically attractive.
- In many cultures, such as those practising arranged marriages, senior family members are regarded as better judges of who is compatible as a partner for their children and therefore attractiveness will be judged on factors other than physical attractiveness.

'You don't always get to choose who you fall in love with.'

Stephani Hecht (2010)

Filter theory

Kerckhoff & Davis (1962)

Filter theory believes that choice of partners is affected by factors limiting the availability of those possible to select from. There is a series of filters that serves to 'thin down the field' to those available.

1 **Similarity of social demographic variables** – focus is upon those individuals we are realistically likely to be able to meet and with whom we will have factors in common. Such individuals will generally be limited to those who live near to us, work with us, socialise with us, etc., with availability further limited to those of similar class, ethnic, religious, educational and economic background to ourselves. Such people will appear attractive, as their similarity will make communication easier, aiding the development of a relationship.

2 **Similarity in attitudes** – focus here is upon individuals meeting and socialising and thus being exposed to each other's beliefs, values and attitudes. Individuals who have similarity of attitudes will be perceived by each other as being more attractive and compatible.

3 **Complementarity** – focus here is upon the degree to which potential partners meet each other's needs, especially emotional ones. Such complementarity helps to make a relationship 'deeper' and thus less superficial and is regarded as the most important factor in establishing commitment towards a long-term relationship.

Research

Festinger *et al.* (1950) reported that people who lived the closest to the stairways in an apartment block had the most contact with other residents of the block and formed the most friendships with other residents, supporting the idea of social demographic variables affecting the choice of possible partners one could be attracted to. This was further supported by Clark (1952) finding that 50 per cent of citizens of Columbus, Ohio, USA, were married to partners who initially lived within walking distance of their house.

Taylor *et al.* (2010) reported that 85 per cent of Americans who got married in 2008 married someone of their own ethnic group, supporting the social demographic idea that individuals' choice of partners is limited to those of a similar background.

Byrne (1961) found that strangers who had similar attitudes to participants were more liked than strangers with differing attitudes. This supports the idea of similarity of attitudes being a limiting factor in who individuals find attractive. This was supported by Tan & Singh (1995), who got 21-year-old participants to complete a questionnaire concerning their attitudes and then exposed them to fake completed attitude questionnaires of a 'stranger', finding they rated 'strangers' with similar attitudes as more attractive.

Sadalla *et al.* (1987) found that women are attracted to males who are reliable, socially dominant, self-confident and extrovert, as such qualities indicate an ability to achieve a relatively high position in society and thus meet their need for provision of resources. This supports the idea of complementarity being

KEY TERMS

Filter theory – that choice of partners is affected by factors limiting the availability of those possible to select from

Similarity of social demographic variables – the limiting influence of socio-cultural factors upon partner choice, such as where you live, social class, race, etc

Similarity in attitudes – the degree of likeness between individuals' viewpoints

Complementarity – the ability of individuals to meet each other's needs

Figure 9.8 Filter theory sees choice of partners as affected by social demographic variables such as religion

an important limiting factor in which individuals are desirable as potential partners. This was further supported by Dijkstra & Barelds (2008), who examined the extent to which individuals were attracted to partners of similar or complementary personality characteristics, finding that complementary personalities were more preferred in both males and females.

Evaluation

- The relative availability of potential partners due to social demographic reasons changes over time (and across cultures) as attitudes change to relationships between people of different backgrounds. In 1960 in the USA less than 3 per cent of marriages were inter-racial, but this has now risen considerably. There is an age factor here, with younger people more likely to marry outside their ethnic group. However, there are sub-cultural differences too, with white American people more likely to marry Asian and Hispanic partners than black American people are. (Pew Research Center, Social and demographic trends, 2017, https://www.pewsocialtrends.org/2017/05/18/1-trends-and-patterns-in-intermarriage/)
- Age is another limiting factor. People tend to socialise in similar age groups and where partners are of different ages, this tends to be between younger females and older men, with a possible evolutionary explanation, as older men tend to be more resource rich and younger females more fertile. The average age difference between partners is 2–3 years, with the female partner being younger.
- Much research into the filter theory focuses on liking and relationships in general, rather than specifically on attraction and romantic relationships, making accurate conclusions difficult to achieve.
- One important consideration in filter theory is that males and females filter out different things, due to having different needs. This applies to age and culture, too. Indeed, filter theory can be accused of cultural bias, as most research was performed in individualistic cultures and therefore may not apply to collectivist cultures where relationships are affected by different limiting factors.

STRENGTHEN YOUR LEARNING

1. Outline factors that influence the relationship between self-disclosure and attraction.
2. Summarise what research evidence suggests about self-disclosure and attraction.
3. What other evaluative points can be made concerning self-disclosure and attraction?
4. Explain why physical attractiveness makes individuals seem desirable.
5. Explain what is meant by the matching hypothesis.
6. What does research evidence suggest about physical attractiveness in romantic relationships?
7. What other evaluative points can be made concerning physical attractiveness in romantic relationships?
8. Explain how i] social demography, ii] similarity of attitudes, iii] complementarity act as filters to limit the field of available partners.
9. Summarise what research evidence suggests about filter theory.
10. What other evaluative points can be made about filter theory?

ASSESSMENT CHECK

1 Select from the descriptions A, B, C and D below to complete the table relating to the filter theory. One description will be left over. **[3 marks]**

A Where choice of partners is limited by economic background

B The degree to which an individual's physical characteristics are considered pleasing

C The degree of likeness between individuals' viewpoints

D The ability of individuals to meet each other's needs

Filter	Description
Similarity in attitudes	
Complementarity	
Social demography	

2 Freya has decided to use her local newspaper's classified section to find a romantic partner. In her advert Freya describes herself as looking for an older man seeking a long-term relationship, who is well off financially. She describes herself as youthful, slim and attractive and that she enjoys playing sports.

Making reference to the scenario above, explain Freya's classified advert in terms of evolutionary explanations for partner preferences. **[4 marks]**

3 Research into factors affecting attraction in romantic relationships often uses questionnaires.

Explain one strength and one weakness of the questionnaire method in researching factors affecting attraction in romantic relationships. **[2 + 2 marks]**

4 Explain what is meant by self-disclosure as a factor affecting attraction in romantic relationships. **[2 marks]**

5 Discuss the relationship between sexual selection and human reproductive behaviour. **[16 marks]**

'He's Mr Right, but I'm always right.'
Mara Lawton (2014)

9.3 Theories of romantic relationships

Theories of romantic relationships attempt to explain the processes by which such relationships are formed and maintained. There are many varying types of theory, but the three featured here are **social exchange theory**, **equity theory** and **Rusbult's investment model**.

'I told her I'd wait for ever for her, but that was before I found somebody else who'd give me a lift home.'
Jarod Kintz (2010)

KEY TERMS

Theories of romantic relationships – explanations for the formation and maintenance of intimate alliances

Social exchange theory – an economic explanation of relationship maintenance based on maximising profits and minimising costs

Equity theory – an explanation of relationship maintenance based on motivation to achieve fairness and balance

Rusbult's investment model – relationship satisfaction as dependent upon a consideration of perceived benefits, costs and the quality of possible alternative relationships

Social exchange theory

There are different versions of social exchange theory (SET), but underlying all of them is the idea that in any relationship both partners are continually giving and receiving items of value to and from each other and as people are fundamentally selfish, relationships continue only if both partners feel they are getting more out of the relationship than they are putting in.

The theory sees people as perceiving their feelings for others in terms of profit (the rewards obtained from relationships minus the costs). The greater the rewards and the lower the costs, the greater the profit and therefore the greater the desire to maintain the relationship.

Interactions between partners can be 'expensive', as they take time, energy and commitment, and may involve unpleasant emotions and experiences. Therefore, for a relationship to be maintained, individuals must feel they are receiving more than they put in. The theory also sees social interactions as involving an exchange of rewards, such as affection, intimate information and status. The degree of attraction or liking between partners reflects how people evaluate the rewards they receive relative to those given.

Thus SET is an economic theory, explaining relationships in terms of maximising benefits and minimising costs. The 'social exchange' is the mutual exchange of rewards between partners, like friendship and sex, and the costs of being in the relationship, such as freedoms given up. A person assesses their rewards by making two comparisons:

1 The comparison level (CL) – where rewards are compared against costs to judge profits.
2 The comparison level for alternative relationships (CLalt) – where rewards and costs are compared against perceived rewards and costs for possible alternative relationships.

A relationship is maintained if rewards exceed costs and the profit level is not exceeded by possible alternative relationships.

Figure 9.9 Social exchange theory sees relationships being maintained if benefits exceed costs

Thibaut & Kelley *et al.* (1959) proposed a four-stage model of SET, setting out how relationships could be maintained (see Table 9.1). It perceives that over time people develop a predictable and mutually beneficial pattern of exchanges, assisting the maintenance of relationships.

Table 9.1 Thibaut & Kelley *et al.*'s four-stage model

Stage	Description
Sampling	Rewards and costs are assessed in a number of relationships
Bargaining	A relationship is 'costed out' and sources of profit and loss are identified
Commitment	Relationship is established and maintained by a predictable exchange of rewards
Institutionalisation	Interactions are established and the couple 'settle down'

Research

Hatfield (1979) looked at people who felt over- or under-benefited in their relationships. The under-benefited felt angry and deprived, while the over-benefited felt guilty and uncomfortable, supporting the theory by suggesting that regardless of whether individuals are benefited, they do not desire to maintain a relationship if it is unequal.

Mills & Clark (1980) identified two kinds of intimate relationship: the communal couple, where each partner gives out of concern for the other, and the exchange couple, where each keeps mental records of who is 'ahead' and who is 'behind'. This indicates that there are different types of relationships and that SET can be applied to some of them, but not universally to all.

Rusbult (1983) asked participants to complete questionnaires over a seven-month period concerning rewards and costs associated with relationships, finding that social exchange theory did not explain the early 'honeymoon' phase of a relationship when balance of exchanges was ignored. However, later on, relationship costs were compared against the degree of personal satisfaction, suggesting that the theory is best applied to the maintenance of relationships.

Rusbult (1983) found that the costs and rewards of relationships were compared against the costs and rewards of potential alternative relationships in order to decide whether the relationship should be maintained, supporting the social exchange model's idea that people assess rewards by making comparisons.

Rusbult & Martz (1995) found that women who had been physically assaulted by their partners and were living in a women's refuge were likely to return to their abusive partners, as they did not have better alternatives, often due to low levels of education, no job prospects and little access to money. This supports SET, as even though the women were in abusive relationships, the profits were seen to exceed the costs.

RESEARCH IN FOCUS

Research into relationships, such as Rusbult's (1983) study into the social exchange theory, are written up as psychological reports and subjected to peer review before being published. Such reports have to be written up in a conventional way of different sections in a certain order.

Explain i) what the basic aims of a psychological report are; ii) why psychological reports have to be written in a conventional way.

List the basic sections of a psychological report and outline briefly what each section should contain.

Evaluation

- Rubin (1983) believes that although people are not fundamentally selfish, attitudes towards others are determined to a large extent by how rewarding we think they are for us, supporting the theory.
- Sedikides (2005) claims that people are capable of being unselfish – doing things for others without expecting anything in return. This is most evident in relationships with those emotionally closest to us. Sedikides believes that individuals can bolster their partner's self-esteem when they are faced with failure and other stressful life events. Therefore, the view of humans as being out for what they can get is simplistic and inaccurate.
- Fromm (1962) argues against the theory, defining true love as giving, as opposed to the false love of the 'marketing character', where people expect to have favours returned.
- The social exchange theory was modified into the equity theory, which concerns balance and stability in relationships and is a logical progression.
- Argyle (1988) criticised methodologies that evaluate social exchange theory, declaring them contrived and artificial, with little relevance to real life.
- Research has concentrated on the short-term consequences of relationships rather than the more important, long-term maintenance of relationships.
- The theory applies to people who 'keep score'. Murstein *et al.* (1977) devised the exchange orientation tool, identifying such scorekeepers, who are suspicious and insecure, suggesting that the theory only suits relationships lacking confidence and mutual trust.

YOU ARE THE RESEARCHER

Assess social exchange theory by combining the experimental method with a questionnaire to compare two groups of people in romantic relationships, such as people from different age ranges or different genders, by asking them to state what they give and receive in their relationships (see Chapter 7).

What type of experimental method would this be? What experimental design would you use? What would the IV and DV be? For the questionnaire would you use open or closed questions? How would you compile your data?

Construct a suitable table and graph to display your data. What statistical test would be used to analyse your data? Give three reasons for the choice of this test.

'Fairness does not mean everyone gets the same. Fairness means everyone gets what they need.'

Rick Riordan (2005)

Equity theory

Equity in relationship theory does not mean equality; instead it believes individuals are motivated to achieve fairness in relationships and to feel dissatisfied with inequity (unfairness). Definitions of equity within a relationship can differ between individuals.

Maintenance of relationships occurs through balance and stability. Relationships where individuals put in more than they receive, or receive more than they put in, are inequitable, leading to dissatisfaction and possible dissolution (ending of the relationship). The recognition of inequity within a relationship presents a chance for a relationship to be saved – that is, maintained further by making adjustments so that there is a return to equity.

Relationships may alternate between periods of perceived balance and imbalance, with individuals being motivated to return to a state of equity. The greater the perceived imbalance, the greater the efforts to realign the relationship, so long as a chance of doing so is perceived to be viable.

Walster *et al.* (1978) saw equity as based on four principles, as set out in Table 9.2.

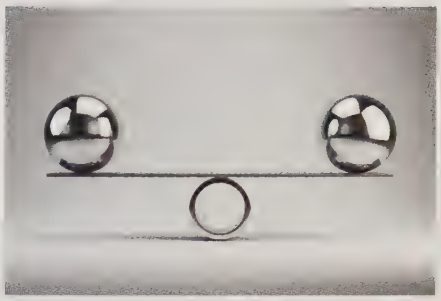


Figure 9.10 Equity theory sees relationship maintenance occurring through balance and stability

Table 9.2 The four principles of equity

Principle	Description
Profit	Rewards are maximised and costs minimised
Distribution	Trade-offs and compensations are negotiated to achieve fairness in a relationship
Dissatisfaction	The greater the degree of perceived unfairness, the greater the sense of dissatisfaction
Realignment	If restoring equity is possible, maintenance will continue, with attempts made to realign equity

Research

Argyle (1977) found that people in close relationships do not think in terms of rewards and costs unless they feel dissatisfied, implying that equity, at least in a conscious fashion, is not a valid explanation of relationship maintenance.

Murstein & MacDonald (1983) supported Argyle, finding that a conscious concern with 'getting a fair deal', especially in the short term, makes compatibility hard to achieve, especially between married couples.

Canary & Stafford (1992) devised the Relationship Maintenance Strategies Measure (RMSM), using it to assess degree of equity in romantic relationships. A link was found between degree of perceived equity and the prevalence of maintenance strategies, implying that equitable relationships are maintained.

Dainton (2003) studied 219 individuals in romantic relationships, finding that those in relationships of perceived inequity had low relationship satisfaction, but were motivated to return to an equitable state to maintain the relationship, suggesting that equity is a main factor in relationship satisfaction and maintenance.

Yum *et al.* (2009) looked at different types of heterosexual romantic relationships in six different cultures. As predicted by equity theory, maintenance strategies differed, with individuals in perceived equitable relationships engaging in most maintenance strategies, followed by those in perceived over-benefited and under-benefited relationships. Cultural factors had little effect, suggesting that equity theory can be applied to relationships across cultures.

Evaluation

Equity theory still portrays people as selfish. Many researchers, like Duck (1988), prefer to see people as concerned with an equitable distribution of rewards and costs for themselves *and* their partners.

Kelley & Thibaut (1978) proposed interdependence theory, which suggests that not all social interactions reflect a shared desire for equity and fair exchange. Intimate relationships are varied and complex, and partners' motives and desires can clash as well as coincide, producing many outcomes, including aggression, altruism, competition, capitulation (giving in), cooperation and intransigence ('digging your heels in'). Interdependence theory goes beyond individual partners, considering the harmony and/or conflict between attitudes, motives, values or goals of people in social relationships.

Sprecher (1986) believes that close relationships are too complex to allow for precise assessment of various rewards and costs involved in establishing equity.

Mills & Clark (1982) believe that it is not possible to assess equity in loving relationships, as much input is emotional and therefore unquantifiable, and to do so diminishes the quality of love.

Equity seems more important to females, suggesting that the theory is not applicable to both genders. Hochschild & Machung (1989) found that women do most of the work to make relationships equitable.

Some research suggests that equity theory does not apply to all cultures. Moghaddam *et al.* (1983) found that US students prefer equity (fairness), but European students prefer equality, suggesting that the theory reflects the values of US society.

Rusbult's investment model of commitment

Rusbult's theory attempts to identify the determinants of relationship commitment and is comprised of three factors positively linked with commitment: satisfaction level, the comparison with alternatives and size of investment.

1 **Satisfaction level** refers to the positive v. negative effect experienced in a relationship. Satisfaction is influenced by the degree to which a partner meets an individual's needs, for example the extent to which a partner meets one's emotional and sexual needs.

2 **Comparison with alternatives** refers to the perceived desirability of the best alternative to the current relationship and is based upon the extent to which an individual's needs could be met within that alternative relationship, for example the extent to which a potential alternative partner could meet one's emotional and sexual needs. If such needs could be better met elsewhere then the quality of alternatives is high. If such needs are best met within the current relationship then commitment is stronger.

3 **Investment size** refers to the amount and importance of the resources associated with a relationship and the extent to which such resources would decline in value or be lost if the relationship was to end. Partners invest directly into relationships, such as the time and effort put into the relationship,

as well as indirect investments, such as shared friends, children and co-owned material possessions. After investments have occurred, commitment is heightened as ending a relationship would then become more costly.

There are also two variables linked to commitment:

- **Equity** is the degree of 'fairness' within a relationship. Inequity (perceived unfairness) leads to distress and lack of satisfaction with a relationship and thus less commitment to it. Such distress can be relieved by ending the relationship.
- **Social support** is the degree of care and assistance available from others, such as from family and friends. If such others approve of a relationship it produces a positive influence that increases commitment to the relationship.

Figure 9.11 Rusbult's model sees factors of satisfaction level, quality of alternatives and investment as determining relationship commitment

Research

Lin & Rusbult (1995) found that although findings were inconsistent, females generally reported higher satisfaction levels, poorer scores for quality of alternatives, greater investments and stronger overall commitment. This suggests gender differences may exist, with females demonstrating greater dependence and stronger commitment than males.

Rusbult *et al.* (1998) gave the investment model scale (IMS) questionnaire to student participants in relationships, to find that commitment in relationships was positively correlated with satisfaction level, negatively correlated with the quality of alternatives and positively correlated with investment size, supporting all three factors of Rusbult's model.

Rusbult *et al.* (1998) administered the IMS questionnaire to participants in homosexual relationships, finding support for all factors of the model, as did Duffy & Rusbult (1986) when administering the same questionnaire to individuals in heterosexual relationships, which suggests that the model explains commitment in a variety of relationships.

Van Lange *et al.* (1997) found support for all factors of the model in Taiwanese participants and this was coupled with similar results found by Lin & Rusbult (1995) with Dutch participants, which suggests the model has cross-cultural validity.

Evaluation

- Research indicates that Rusbult's model with its focus on commitment and what individuals have invested is a better predictor of long-term maintenance in relationships than equity theory.
- Rusbult's model can explain why partners remain in abusive relationships, as the cost of losing what they have invested and committed to in the relationship may be too great, with no possible alternative relationships to turn to.
- The investment model is able to explain infidelity, as such behaviour occurs when there is low satisfaction with a current relationship and high satisfaction with an alternative relationship, with both these factors serving to erode commitment.
- Research that supports the investment model is highly reliant on self-report measures, which may be subject to socially desirable and idealised answers, as well as researcher bias, casting some doubts on the validity of the results.

ON THE WEB

A fascinating documentary insight into the explanations for relationship formation that focuses on relationships within different cultures can be found online. Go to **www.youtube.com** and search for 'Love and relationships around the world (full documentary)'.

'Stop going to a dry well for water.'
Arabic proverb

'I like my relationships like I like my eggs. Over easy.'
Jarod Kintz (2010)

9.4 Duck's phase model of relationship breakdown

KEY TERMS

Dissolution – the process by which romantic relationships break down

Duck's phase model of dissolution – that relationship breakdown occurs through a series of stages (also known as Duck's phase model of relationship breakdown)

Intra-psychic phase – first stage of dissolution where a partner experiences dissatisfaction with their relationship

Dyadic phase – second stage of dissolution where relationship dissatisfaction is discussed between partners

Social phase – third stage of dissolution where dissatisfaction is made known within social networks

Grave-dressing phase – fourth stage of dissolution where post-relationship view of break-up is established

Duck (2001) proposed three general reasons for why relationships break up:

1 Pre-existing doom – incompatibility and failure are fairly much guaranteed from the start of the relationship.
2 Mechanical failure – two compatible, well-meaning people grow apart and find that they cannot live together any longer (this is the most common cause).
3 Sudden death – the discovery of infidelity (cheating) or the occurrence of a traumatic incident (such as a huge argument) leads to immediate ending of a relationship.

Duck proposed several other factors as contributing to relationship **dissolution**:

- Predisposing personal factors – for example, individuals' bad habits or emotional instabilities.
- Precipitating factors – for example, exterior influences, such as love rivals, process features, such as incompatible working hours, emergent properties, such as lack of relationship direction, and attributions of blame, such as perceiving that someone else is to blame.
- Lack of skills – for example, being sexually inexperienced.
- Lack of motivation – for example, perceiving inequity.
- Lack of maintenance – for example, spending too much time apart.

Duck believed that the 'official' reasons given to others, including partners, to justify breaking up are more interesting psychologically than the real reasons. The psychology of break-up involves many individual psychological processes, group processes, cultural rules and self-presentation to others.

As Duck (2001) said:

> *'Truly committed romantic relationships involve the foregoing of other romantic relationships and commitment to only one partner . . . So, the ending of a romantic relationship indicates two people are now legitimately available as partners for other relationships. This requires them to create a story for the end of the relationship that leaves them in a favourable light as potential partners. Romantic relationships are, therefore, typically ended publicly in a way that announces the ex-partners' freedom from the expectations of exclusive commitment.'*

Duck (1982) sees dissolution as a personal process, but one where partners regard how things will look to friends and social networks. Duck therefore suggested an account of dissolution involving four sequential phases. This

explanation begins where one partner is sufficiently dissatisfied with the relationship over a long enough period of time to consider ending it.

The four phases are:

1 **Intrapsychic** – one partner privately perceives dissatisfaction with the relationship.
2 **Dyadic** – the dissatisfaction is discussed. If it is not resolved, there is a move to the next stage.
3 **Social** – the breakdown is made public. There is negotiation about children, finances and so on, with wider families and friends becoming involved.
4 **Grave dressing** – a post-relationship view of the break-up is established, protecting self-esteem and rebuilding life towards new relationships.

The thresholds (precipitating factors) and phases are shown in Table 9.3.

Figure 9.12 Duck's theory sees relationship breakdown as occurring in four phases

Table 9.3 The main thresholds and phases of dissolving personal relationships (based on Duck, 1982; from Duck, 1988)

Threshold	Phase	Characteristic behaviours
'I can't stand this any more'	Intrapsychic phase	• Personal focus on partner's behaviour • Assess adequacy of partner's role performance • Depict and evaluate negative aspects of being in the relationship • Consider costs of withdrawal • Assess positive aspects of alternative relationships • Face 'express/repress dilemma' – whether you should express your dissatisfaction or keep it to yourself
'I'd be justified in withdrawing'	Dyadic phase	• Face up to 'confrontation/avoidance dilemma' • Confront partner • Negotiation through 'our relationship' talks • Attempt repair and reconciliation? • Assess joint costs of withdrawal or reduced intimacy
'I mean it'	Social phase	• Negotiate post-dissolution state with partner • Initiate gossip/discussion in social network • Create publicly negotiable face-saving/blame-placing stories and accounts • Consider and face up to implied social network effect
'It's now inevitable'	Grave-dressing phase	• Perform 'getting over it' activities • Retrospective, reformative post-mortem attribution • Publicly distribute own version of break-up

Research

Kassin (1996) found that women are more likely to stress unhappiness and incompatibility as reasons for dissolution, while men blame lack of sex. Women wish to remain friends, while males want a clean break, suggesting gender differences that Duck's model does not consider.

Argyle (1988) found that women identified lack of emotional support as a reason for dissolution, while men cited absence of fun, again suggesting gender differences that the model does not explain.

Hatfield *et al.* (1984) reported that when an individual experiences initial dissatisfaction with a relationship they are burdened by resentment and feelings of being 'under-benefited', which leads to social withdrawal so that the individual can consider their position, thus supporting the notion of an intrapsychic phase.

Akert (1992) found that the person who instigated the break-up suffers fewer negative consequences than the non-instigator, suggesting individual differences in the effects of dissolution that the model does not explain.

Tashiro & Frazier (2003) performed a survey of 92 students about their experiences after relationship breakdowns, finding a number of personal growth factors that helped with future relationships, such as feeling stronger, more independent and better off emotionally. Participants also felt they had gained wisdom that would help them with future relationships and that their relationships with friends had strengthened. This supports Duck's idea that through grave-dressing processes people are able to recover and move on after relationship dissolution.

YOU ARE THE RESEARCHER

Design an interview that investigates the reasons why romantic relationships fail and the stages that breakdowns occur by. Will you use a structured, semi-structured or unstructured interview technique and open or closed questions or a mixture of the two? Once you have decided, compose your questions. How will you deal with possible interviewer effects when interviewing both males and females? Finally you will need to decide how to assess and present your data.

Evaluation

- The theory has face validity as it is an account of relationship breakdown that most people can relate to their own and/or others' experiences.
- The view of dissolution as a process, rather than an event, is widely accepted. This view applies to the breakdown of friendships as well as sexual relationships, including marriages. However, the theory applies mainly to romantic relationships because these are exclusive in a way that friendships generally are not.
- The theory does not focus exclusively on individual partners, but takes their social context into account. As Duck (2001) says: 'Break-up involves not only the individual creating the break-up, but the psychological sense of integrity of the person to whom it all happens . . . But a lot that happens is done with an eye on the group that surrounds the person.'
- The theory does not take into account why dissatisfaction occurred in the first place; its starting point is where dissatisfaction has already set in. Therefore it fails to provide a complete picture of dissolution.
- Duck's four phases are not universal – they do not apply in every case of relationship breakdown – nor do they always occur in the order described.
- The model does not apply to heterosexual couples who decide not to have children.

- The model is simplistic as it does not account for relationships such as casual affairs and friendships.
- Rollie & Duck (2006), responding to criticisms, modified the theory to add a fifth phase of resurrection after that of grave dressing, which represented a period of reconfiguration of self and preparation for new relationships. They also added a new element whereby communication patterns within each phase could result in a reversion to an earlier, more positive state of the relationship rather than progressing on to the next phase of the break-up.

PSYCHOLOGY IN THE REAL WORLD

Figure 9.13 Relationship counselling is a practical application of research into relationship formation and dissolution

A practical application of research into relationship formation and dissolution is that of relationship counselling, such as that offered by the organisation Relate. Advice, sex therapy, workshops and mediation are provided for individuals of all ages and persuasions, and even assistance with separating and divorcing, including counselling for children.

Relate helps 150,000 people a year in Britain, with 80 per cent of respondents reporting that the organisation strengthened their relationships. Relate's success can be attributed to the fact that everything the organisation does, including the training of staff, is based on solid psychological facts established through properly conducted research. Therefore Relate's high profile and the valuable work it does are a shining example of the practical applications that psychology can have in the real world, greatly benefiting and enhancing people's lives.

STRENGTHEN YOUR LEARNING

1 Summarise the main points that describe social exchange theory (SET).
2 To what extent does research evidence support SET?
3 What other evaluative points can be made about SET?
4 Summarise the main points that describe equity theory (ET).
5 To what extent does research evidence support ET?
6 What other evaluative points can be made about ET?
7 For Rusbult's investment model of commitment, a) explain what is meant by i) satisfaction level, ii) quality of alternatives, iii) investment size; b) explain how i) equity, ii) social support are linked to commitment.
8 To what extent does research evidence support Rusbult's theory?
9 What other evaluative points can be made about Rusbult's theory?
10 Outline a) the general reasons Duck gives for relationship dissolution, b) other contributory factors for dissolution, c) the four phases of dissolution.
11 To what extent does research evidence support Duck's theory?
12 What other evaluative points can be made about Duck's theory?

ASSESSMENT CHECK

1 Select from the characteristics A, B, C and D below to complete the table relating to the phases of Duck's theory of dissolution. One description will be left over. **[3 marks]**

A Discussion of situation with friends

B Consideration of the costs of dissolution

C Confrontation with partner

D Performance of 'getting over it' activities

Phases of Duck's theory	Characteristic
Social phase	
Intrapsychic phase	
Dyadic phase	

2 To investigate the investment model of relationships a researcher used an Investment Scale questionnaire, which gave an investment score for each participant on a scale of 0–30, with 0 representing no investment in relationships and 30 representing extreme investment in relationships. The calculated measures of central tendency for the investment scores were for the mean, 10.7, for the median, 11.8 and for the mode 15.

Sketch an appropriate graph to show the distribution of investment scores. Label the axes and mark on the positions of the mean, median and mode. **[4 marks]**

3 Derek is in a long-term relationship with Catherine. Derek used to find the relationship very rewarding, as Catherine gave him a lot of affection and attention. However, more recently Derek feels he puts more into the relationship than he is getting out of it and he also feels he has given up a lot, like not seeing his friends as much as he used to.

Explain how Derek views his relationship with Catherine in terms of the social exchange theory. **[3 marks]**

4 Research into self-disclosure often uses self-reports. Explain one limitation of self-reports in investigating self-disclosure. **[2 marks]**

5 Outline what is meant by the quality of alternatives within Rusbult's investment model. **[2 marks]**

6 Outline and evaluate the equity theory of romantic relationships. **[16 marks]**

'The internet is the ultimate singles' bar – without the noise, the drunks, and the high cost of all those not-so-happy hours.'

Eric Shipmon (2012)

9.5 Virtual relationships in social media

The internet and social media have become key factors in the relationships of many individuals in the modern world, involving both romantic and friendship relationships. The internet has created a great opportunity for people to seek and create relationships. According to the Pew Research Internet Project (2013), 11 per cent of all Americans and 38 per cent of those single and looking for a partner have used online dating sites or mobile dating apps. Online dating is most apparent among the 20–45-year-old age group, which is to be expected as this age group has either grown up with or experienced their adult life at a time that coincides with the introduction and growth of social media. Of Americans using online dating sites, 66 per cent have gone on to physically meet up with someone they found through a dating site, with 23 per cent claiming to have met a long-term partner through such means. Internet dating sites have benefited greatly from the advent of picture and video sharing, which are important for creating personal profiles and allowing more choosiness in deciding whether to pursue a virtual relationship with someone.

An early drawback of **virtual relationships** was that such relationships had no visual or audio element to them and were not conducted in real time. The multiple techniques face-to-face interactions use, such as vocal inflections and body language cues, were not present, meaning that such relationships were less rich in communication and presented more opportunities for misreading communications. However, advancements in technology that now allows virtual relationships to be conducted visually in real time with webcams mean that the quality of communication in virtual relationships is greatly advanced.

KEY TERM

Virtual relationships – non-physical interactions between people communicating via social media

Online dating is credited with facilitating an increase in inter-racial relationships and spreading the acceptance of homosexual relationships. Dating sites also allow sexual minorities greater access to possible partners. Virtual relationships may allow individuals to explore and experiment with aspects of their sexuality that they never would have in face-to-face relationships.

Social networking services can give greater access to virtual relationships, as they allow individuals to seek and find others with whom they have characteristics in common, such as location, hobbies, age, etc. Individuals can access information about others through their profiles, allowing selection of individuals for possible virtual relationships.

Many individuals also form virtual relationships through online gaming sites, such as World of Warcraft, which allow players to interact and form gaming groups, leading to opportunities for further communication, interaction and even romantic relationships. Such interactions and relationships can also form through online forums and chat rooms.

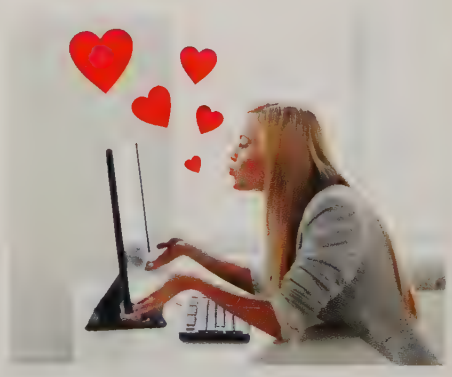


Figure 9.14 The growth of the internet and other social media has seen a huge increase in virtual relationships

Virtual relationships are considered to have produced greater levels of intimacy between individuals, especially those who are less socially skilled, as virtual relationships circumvent barriers that face-to-face relationships can have. Such relationships may also help socially inept people to learn social skills that will aid their ability to form and maintain face-to-face relationships.

A danger of forming virtual relationships is people misrepresenting themselves and that due to the anonymous nature of such relationships people, especially females, become harassed or threatened in ways that would be unlikely to occur in face-to-face relationships. This is known as trolling or cyber-bullying. Individuals are harassed due to the anonymity that social media provides. The virtual nature of the relationship means that bullies or trolls become divorced from the consequences of their actions. Cyber-stalking also occurs where online predators groom victims by misrepresenting themselves, with examples of such relationships becoming physical and abusive.

An interesting aspect of virtual relationships is whether internet affairs are as serious as 'real' affairs. Evolutionary theory predicts that females should be more critical of such conduct, as they have more to lose through emotional infidelity (which is what internet affairs involve), while males should be less critical, as they have more to lose through sexual infidelity, which internet affairs do not involve (see The evolutionary explanations for partner preferences, page 380).

Research

Mesch & Talmud (2006) surveyed 987 Israeli teenagers to find that they had known their online friends for shorter lengths of time than their physical friends and participated in fewer activities with them, tending to communicate only about specific interests. They also had fewer discussions with virtual friends and on less personal topics. Overall, virtual friendships were perceived as less close, which suggests that for the majority virtual relationships are not as integrated with everyday life as face-to-face relationships are.

Stephure *et al.* (2009) reported that most people indulging in virtual relationships were seeking fun, companionship and someone to talk to. A majority were also interested in developing casual friendships and dating relationships. However, very few reported seeking such relationships to specifically find sexual or marital partners. This suggests that any long-term physical relationships that develop from virtual relationships are mainly a secondary effect of such relationships.

Mishna *et al.* (2009) found that the vast majority of 16–24 year olds considered virtual relationships to be as real as their physical relationships and that the internet played a crucial role in sexual and romantic experiences of adolescents, illustrating the importance and acceptance of virtual relationships by the younger generation.

Smith & Duggan (2013) report that 54 per cent of people using online dating sites believe they have been involved with someone misrepresenting themselves and 28 per cent have been contacted in a way that made them feel harassed or uncomfortable. This was more apparent among females (42 per cent) compared with males (17 per cent). The findings back up the view that social media presents more dangers of misrepresentation and harassment than face-to-face relationships do.

RESEARCH IN FOCUS

A lot of the research into virtual relationships is conducted with interviews and questionnaires. Explain why the findings of such research can be invalid due to participants giving idealised and socially desirable answers.

Cornwell & Lundgren (2001) surveyed 80 chat room users to find that 28 per cent admitted to misrepresenting their physical appearance, 23 per cent their age and 18 per cent their background, illustrating the widespread use of misrepresentation in virtual relationships.

Parker & Wampler (2003) found that both males and females considered internet affairs to be less of an affair than a physical affair. Internet affairs primarily involve emotional rather than sexual infidelity, which goes against evolutionary theory that females would be more jealous and therefore more critical of such conduct (see The evolutionary explanations for partner preferences, page 380). This is supported by the researchers also finding that females find involvement in online porn more objectionable than males, again refuting evolutionary theory about gender differences concerning infidelity.

ON THE WEB

Watch a fascinating BBC 2 programme about Kira and Nick and how their virtual relationship became an intimate face-to-face relationship, with even their marriage taking place in cyberspace. Go to **www.youtube.com** and search for 'Wonderland – virtual relationships'.

Evaluation

- 'Real' relationships can have a virtual side to them. Lenhart & Duggan (2014) reported that 25 per cent of Americans who are married or in long-term partnerships have texted their partner when both were at home together. Indeed, 21 per cent of mobile phone and internet users in committed relationships report that they have felt closer to their partners as a result of online or text exchanges and 9 per cent have resolved arguments online or by text that they were having trouble resolving in person. These effects are even higher with younger people. However, 8 per cent of people in committed relationships believe their relationship has suffered due to their partner's virtual relationships with others.
- Virtual relationships may be stopping people from committing to long-term non-virtual relationships because social media supplies them with a never-ending supply of people to form relationships with.
- The ways in which virtual relationships form and are conducted will continue to evolve as different forms of social media emerge. For example, Facebook is a relatively new phenomenon with no guarantee that it will last long term or not be replaced by other social media, in the same way that Bebo and Myspace are now less popular than they were.
- Although online interactions have been calculated to take four times longer than face-to-face interactions, this gives users time to evaluate what has been communicated to them and time to consider a 'perfect' response, making the quality of interactions potentially superior to that of face-to-face communications.

'On the internet all you reveal is your heart.'
Anonymous

Self-disclosure in virtual relationships

Self-disclosure involves revealing of personal information about oneself to another individual. Psychologists are interested in determining whether this differs between virtual relationships and face-to-face relationships.

KEY TERM

Self-disclosure in virtual relationships – the revealing of intimate information about oneself to another via social media sources

The anonymity of virtual relationships means that individuals can reveal intimate personal information with less fear of being socially embarrassed by such information being leaked to people who know them. This is similar to Rubin's (1975) 'strangers on a train' phenomenon, where individuals reveal more

Figure 9.15 The anonymity of the internet allows for greater self-disclosure in virtual relationships

personal information to a stranger as they do not have access to the individual's social circle. Unlike strangers who only meet once, virtual relationships allow for continued interactions, meaning that a relationship can be built.

Because of the greater ease of self-disclosure in virtual relationships, closeness and intimacy develop more quickly than with face-to-face relationships and are based on more meaningful factors, such as shared attitudes and interests, rather than more superficial factors found with face-to-face relationships, like physical attractiveness. Also, because of the anonymity of virtual relationships, self-disclosure tends to be about one's 'true' self rather than a publicly presented 'false' self and such real intimacies help to build a stronger, more meaningful relationship. As virtual relationships have a tendency, through intimate self-disclosure, to be stronger and more meaningful, this means they also have the potential to be long-lasting, unlike more superficial face-to-face relationships.

Self-disclosure creates high levels of affection that are sustained if people in virtual relationships actually meet. This occurs due to a lack of physical information, which can help form initial impressions of individuals who are resistant to change. As deep, virtual relationships form without physical information, such information will not be that influential when people meet.

A recent phenomenon of self-disclosure in virtual relationships is sexting, the sending of sexually explicit photos/videos. This occurs as probably people feel less inhibited in their behaviour in social media than in real life, but there are dangers, such as being blackmailed or coerced into such behaviour against one's will. Self-disclosure in virtual relationships also carries a danger of dishonest individuals misrepresenting themselves in order to appear favourable so that they can successfully exploit people, for example for financial gain or sexual purposes.

Research

Yum & Hara (2005) found that American participants reported that greater disclosure in virtual relationships was associated with more trust, while Korean participants reported greater disclosure led to less trust, while greater disclosure was not a factor with Japanese participants. This suggests that the effect of disclosure on virtual relationships is mediated by cultural factors.

Peter *et al.* (2005) found introverts were motivated to communicate online to compensate for their lack of social skills, which increased their motivation to make friends online, which in turn led to more self-disclosure and thus more intimate virtual relationships. This suggests that quieter, shy people are more attracted to self-disclose in virtual relationships. However, it was also found that extroverts self-disclosed more in virtual relationships, which helped to develop their relationships further too, illustrating again how personality mediates virtual relationships.

Schouten *et al.* (2007) found that people high in social anxiety revealed greater self-disclosure in virtual relationships due to the lack of non-verbal cues in online communications, supporting the idea that people who have problems socialising in the physical world are able to self-disclose more in virtual relationships.

McKenna & Bargh (2000) surveyed 568 internet users to find that 54 per cent had gone on to physically meet virtual friends and 63 per cent had talked on the phone. In a two-year follow-up study, 57 per cent revealed their virtual relationships had continued and increased in intimacy. Romantic relationships

fared even better, with 70 per cent of relationships formed online enduring beyond two years compared with more than 50 per cent of physical relationships that fail within two years. The results illustrate how virtual relationships can develop into physical ones and their often enduring nature.

Data from the Pew Research Internet Project (2014) shows that 9 per cent of American mobile phone owners have sent a sext, with individuals in relationships just as likely to do so as single people. This suggests that this form of uninhibited self-disclosure is a quite common occurrence.

Evaluation

- The fact that people who lack social skills are especially attracted to virtual relationships suggests a practical application in using virtual relationships as a therapy for the socially inept to learn social skills useful for shaping social relationships in the real world. Such a therapy could also be used to help those with social phobias (fear of social situations) overcome their fears.
- One of the dangers of self-disclosure in virtual relationships is that individuals may be presenting their ideal self to their virtual partner, rather than their real self, faults and all. Therefore the intimacy created can lead to idealisation of a virtual partner, which the person cannot live up to in reality.
- Research has not really discriminated between different types of intimacy and the effects these have on the degree of attraction an individual feels towards a partner. For example, the intimate physical nature of sexting is very different to the intimate revelations of one's inner thoughts and feelings.
- The internet and other forms of social media may be creating social pressure upon individuals to conform to certain levels of intimate disclosures that they are not truly happy with. This is especially true of sexting where many individuals, often female, report pressure on them to send sexts.

Effects of the absence of gating on the nature of virtual relationships

The creation of virtual relationships is not subject to the usual limiting factors that affect the formation of face-to-face relationships. Visible features, such as level of physical attractiveness, a tendency to stutter, social inadequacy/shyness, etc., are not apparent, which means less physically beautiful and socially skilled individuals have a greater chance to build relationships to the point where intimate self-disclosure can occur. The idea is that once relationships have progressed on to a deeper, more intimate level, then revelations about lack of physical beauty, etc. will not be as damaging to a relationship as they would have been initially in the 'real' world.

As gating can create barriers to less physically attractive and socially inept individuals forming relationships, such individuals often have a stronger, unrealised need to self-disclose in a more intimate and honest fashion, thus revealing their 'true' self and building closer and more meaningful relationships than they would in face-to-face situations. Such individuals therefore regard their virtual relationships as more identity-important, as it is where they reveal their 'true' self.

ON THE WEB

A comprehensive and detailed account by Nguyen, Bin & Campbell (2012) of gating in internet and non-internet relationships, including theoretical aspects as well as research studies, can be found at **www.researchgate.net/profile/Yu_Sun_Bin/publication/51750501_Comparing_online_and_offline_selfdisclosure_a_systematic_review/links/0fcfd506a4f4bd71ae000000.pdf.**

Research

McKenna *et al.* (2002) got participants to either interact with a partner in person for 20 minutes on two 'real' occasions or via an internet chat room first before meeting face to face. In the final condition participants interacted with one partner in person and another via an internet chat room, but unbeknown to both partners they were actually the same participants (the order in which people met in this final condition was counterbalanced). Each participant was paired with an opposite-sex partner on ten occasions. It was found that partners were liked more when they met via the internet than face to face in all situations because communications were seen as more intimate. This supports the idea that in face-to-face interactions, superficial gating features, like degree of physical attractiveness, dominate and overwhelm other factors that lead to more intimate disclosure and greater attraction.

Bargh *et al.* (2002) found that intimacy developed more quickly with virtual than face-to-face relationships because of a lack of gating features that typically prevent intimate disclosures in face-to-face relationships. This supports the idea that a lack of gating helps virtual relationships to grow more quickly and intimately than face-to-face ones.

McKenna (2002) found that the removal of physical gating features, such as level of physical attractiveness, allowed certain disadvantaged people, such as those with a lack of physical beauty, to bypass the usual obstacles that hinder them from developing intimate relationships in face-to-face settings. This illustrates why a lack of gating features makes virtual relationships so desirable to those who find establishing face-to-face relationships difficult.

Rosemann & Safir (2006) used questionnaires to find that the online environment allowed individuals to experiment with and reveal non-conventional identities to others that would not be possible via face-to-face interactions due to inhibiting gating features. This illustrates how virtual relationships allow people to develop intimate relationships based more upon their true selves than face-to-face relations would.

Evaluation

- As well as direct gating features that concern visible features of an individual, such as their shyness, lack of physical attractiveness, etc., gating features that limit self-disclosure can be more indirect ones, like the fear associated with face-to-face relationships of disclosed intimate details being revealed to one's social circle.
- The **absence of gating** features in virtual relationships means that there is a much wider potential group of people to form relationships with people online, as virtual relationships will, from the start, be focusing more upon common interests, attitudes, etc. rather than being limited by more superficial but dominant gating features, such as level of physical attractiveness.
- Research has not really considered that limiting gating features may differ between groups of people; for instance age and level of physical attractiveness are probably more of gating factors for females seeking male partners than for males seeking female partners.
- The majority of studies carried out so far into the lack of gating in virtual relationships have used self-reports, which may be prone to idealised and socially desirable answers and thus not be providing valid data.

KEY TERM

Absence of gating – the lack of limiting factors upon the formation of virtual relationships that form barriers to the creation of physical relationships

STRENGTHEN YOUR LEARNING

1 Summarise the main points regarding virtual relationships in social media.
2 What does research evidence suggest about virtual relationships in social media?
3 What other evaluative points can be made concerning virtual relationships in social media?
4 Explain how self-disclosure can affect virtual relationships in social media.
5 What does research evidence suggest about how self-disclosure affects virtual relationships in social media?
6 What other evaluative points can be made concerning how self-disclosure affects virtual relationships in social media?
7 Outline how an absence of gating can affect virtual relationships in social media.
8 What does research evidence suggest about how an absence of gating affects virtual relationships in social media?
9 What other evaluative points can be made concerning how an absence of gating affects virtual relationships in social media?

'You can't ever be your heroes, but you can love their gifts.'
John Piper (2011)

9.6 Parasocial relationships

Parasocial relationships are one-sided relationships that occur with media personalities outside of an individual's real social network, generally without the personality's knowledge, such as with hero worship of a celebrity. Parasocial encounters occur when individuals experience a media personality through media presentations, such as on a TV show. Individuals can come to feel that such encounters are the same as face-to-face meetings – they feel they 'know' the personality and are really meeting them. Parasocial relationships resemble physical interpersonal relationships, like friendships, in several ways; for example they are voluntary, have a personal focus, provide companionship and are preceded by attraction.

Parasocial relationships occur in all age groups, but peak between 11 and 17 years of age, then decline slowly afterwards. Level of education is also a factor – the less education, the greater the level of attraction to media personalities. There are gender differences, with males usually more interested in sports stars, while females are generally more interested in the entertainment world.

Parasocial relationships were originally perceived as abnormal and thought to have originated from factors such as neuroticism, isolation, loneliness, fear and a lack of social interactions and to be basically a substitute for inadequate relationships. However, a more recent idea is that parasocial relationships may actually serve to help people, especially young people, with identity formation, through observation and imitation of positive role

KEY TERM

Parasocial relationships – one-sided relationships occurring with media personalities outside of an individual's real social network

Figure 9.16 Parasocial relationships are one-sided relationships occurring with media personalities outside of an individual's real social network

models. Parasocial relationships may even be related to mood states, for example interacting through media with a certain personality, as doing so is associated with having positive feelings.

Research

Rubin *et al.* (1985) found little correlation between loneliness and the strength of TV viewers' parasocial relationships with onscreen characters, which refutes the idea that parasocial relationships are a dysfunctional substitute for inadequate relationships.

Turner (1993) found that parasocial relationships, like friendships, tend to form with media personalities with perceived similar attitudes, which supports the idea that parasocial relationships are similar to real interpersonal relationships, though no similarity was found between levels of physical attractiveness and background, which often occurs with face-to-face relationships.

Giles (2000) found that younger people were more attracted to media personalities than older people, supporting the idea that parasocial relationships are affected by age factors.

McCutcheon *et al.* (2002) found a negative correlation of –0.4 between amount of education and amount of celebrity worship, suggesting that those with less education have a more intense interest in celebrity.

Thompson (2006) reported that parasocial relationships satisfy many of the main needs fulfilled by real relationships – the need for relatedness (being connected to someone), competence (a sense of mastery and achievement) and independence. This supports the idea that parasocial relationships resemble face-to-face relationships in many ways.

Gabriel (2008) gave students a questionnaire measuring self-esteem and asked them to write an essay about their favourite celebrity, followed by the same questionnaire. Participants initially scoring low on self-esteem scored much higher after writing the essay, suggesting that they incorporated the celebrities' characteristics into themselves, thus boosting self-esteem, possibly something they could not do in real relationships as the fear of rejection stops them getting close to people. This illustrates how parasocial relationships can have beneficial qualities.

Evaluation

- Younger people may be more attracted to media personalities because they have less involvement in face-to-face social networks and spend more time interacting with media sources than older people.
- Research into parasocial relationships generally uses questionnaires, which can be affected by socially desirable and idealised answers and therefore lack validity. Findings also tend to be in the form of correlations, which do not show causal relationships and may be affected by other variables. For instance, the relationship between low levels of education and high levels of fandom may actually concern levels of intelligence. McCutcheon *et al.* (2004) argue that low levels of education are associated with high levels of parasocial relationships because education is related to intelligence, and thus more intelligent people are better able to see the inadequacies of worshipping media personalities.
- West & Sweeting (2002) recommend media training in schools to highlight the dangers of idolising media personalities, such as developing eating disorders by indulging in extreme dieting to try to attain the super-slim body images of some media personalities.

'Stalking is when two people go for a long romantic walk together but only one of them knows about it.'

Anonymous

Levels of parasocial relationships

People interact with many forms of media, such as TV, films, music, etc. where they encounter people represented by such media, like actors and musicians. Through media presentations individuals form impressions of these people, some of whom are attractive through the personal qualities that they appear to demonstrate. Feelings about such media personalities generally grow stronger with subsequent parasocial encounters and over time an individual may develop feelings of intimacy towards a media personality.

As such relationships grow stronger, individuals may immerse themselves in increased media presentations to 'maintain' the relationship (such as repeatedly watching a singer's performance on YouTube). Such media consumption can become ritualistic in nature, for instance viewing at certain times of day for certain amounts of time. Individuals may even try to intensify the relationship and show their affection by attempting to communicate with the personality (for example by fan mail) and purchasing memorabilia and products associated with the personality. Individuals may even move increasingly out of touch with their real world and deeper into their imagined world involving their relationship with the personality.

Figure 9.17 Parasocial relationships are intensified by purchasing memorabilia relating to a media personality

McCutcheon *et al.* (2002) developed the Celebrity Attitude Scale, which measures items within three **levels of parasocial relationships**:

1. Entertainment-social sub-scale – measures social aspects of parasocial relationships, like discussing media personalities with friends.
2. Intense-personal sub-scale – measures strength of feelings and levels of obsession about media personalities.
3. Borderline-pathological sub-scale – measures levels of uncontrollable feelings and behaviour about media personalities.

It was concluded that parasocial relationships have a single dimension, with lower-scoring individuals showing a keen interest in media personalities, such as reading about them, while high-scoring individuals tend to over-identify with and become obsessive about them.

The differing levels of parasocial relationships are best explained through the **absorption-addiction model**.

KEY TERMS

Levels of parasocial relationships – the varying degrees of involvement with media personalities that individuals develop

Absorption-addiction model – where an individual's fascination with a media personality progresses to a delusion of a real relationship

The absorption-addiction model

The absorption-addiction model proposed by McCutcheon (2002) believes that most individuals know that their degree of admiration for a media personality is because of their entertainment/skill level and this degree of admiration will progress no further than that. However, some people may seek a more intense parasocial relationship with a media personality to fill the dissatisfaction they feel in their own lives. For example, an individual who feels they are a low achiever may become fanatical about a media personality who is perceived as successful. In doing so they hope to 'absorb' some of the success.

In extreme cases, however, involvement in a parasocial relationship becomes addictive and an individual's behaviour may become extreme, bordering on the abnormal, and may even involve criminal behaviour. This might take the

Figure 9.18 John Lennon was murdered in 1980 by obsessed fan Mark David Chapman, whose idolisation of Lennon turned into an obsession with killing him

form of celebrity stalking, an obsessive-addictive disorder where individuals may develop an illusion that they genuinely are in an intimate relationship with the media personality. Very occasionally such behaviour can result in physical violence towards a media personality (see Figure 9.18).

Giles & Maltby (2006) described how progression through the absorption-addiction model occurs in three levels:

1 Entertainment-social – individuals are attracted to media personalities because they are interesting.
2 Intense-personal – individuals feel a connection with the media personality, for example feeling that they are 'soul mates' with the celebrity.
3 Borderline-pathological – individuals in this category have uncontrollable behaviours and obsessive fantasies about their media personality which are completely divorced from reality and which prevent them living a normal life.

ON THE WEB

An informative article by David Giles and John Maltby on parasocial relationships called 'Praying at the altar of the stars', which includes discussion activities and contact details for the researchers, can be found at:

https://thepsychologist.bps.org.uk/volume-19/edition-2/praying-altar-stars

CONTEMPORARY RESEARCH

Celebrity worship syndrome – McCutcheon & Houran (2003)

Celebrity worship syndrome (CWS) is a fascination with the lives of the rich and famous that can become addictive and cross the border from harmless fun to abnormal obsession. At its extremes CWS can develop into mentally disordered behaviour, involving delusions and stalking. The researchers were interested in assessing how common CWS is within the general population, and for what reasons individuals develop such a fascination.

Aim

To assess whether interest in media personalities divides into pathological and non-pathological cases.

Procedure

600 participants completed a personality test and were interviewed about their degree of interest in media personalities.

Participants rated statements, such as 'If he/she asked me to do something illegal as a favour, I would probably do it.'

Findings

One third of the participants exhibited CWS.

20 per cent followed media personalities for entertainment-social reasons, with such people tending to be extroverts.

10 per cent had intense-personal attitudes towards media personalities, bordering on addiction, and often believed they had a special bond with a celebrity. Their personalities tended to be neurotic, tense, emotional and moody.

1 per cent were classed as borderline-pathological, displaying impulsive, antisocial, self-centred behaviour indicative of psychosis. This group included celebrity stalkers and people willing to hurt themselves or others in the name of their idol.

Conclusions

The findings refute the view that celebrity worship is divisible into pathological and non-pathological cases (harmless fun and obsession). Instead, they indicate a 'sliding scale', in which celebrity devotees become progressively more fascinated with their idols.

Individuals with intense attitudes towards celebrities are significantly more likely to suffer from anxiety, depression and social dysfunction.

Worshipping media personalities does not make people dysfunctional, but increases the chances of them becoming so.

Evaluation

- The three types of individuals with CWS correspond to Eysenck's three personality dimensions of extroversion, neuroticism and psychosis, though in unequal amounts.
- There is no indication whether certain personality types develop different forms and intensities of CWS, or whether being obsessed with celebrities causes self-esteem to diminish, which then develops into depression, anxiety and even psychosis.

Research

Meloy (1998) reported that stalkers often have a history of failed sexual relationships and are usually not in sexual relationships at the time of the stalking. Stalking in such cases is a reaction to social incompetence, social isolation and loneliness, which suggests that the borderline pathological level of parasocial relationships is related to personal factors.

Purcell *et al.* (2002) found female stalkers were of a nurturing disposition, were searching for intimacy and stalked people they physically knew, offering a reason for why celebrity stalking is mainly a male pursuit.

Maltby *et al.* (2003) used Eysenck's personality questionnaire to find that individuals in the entertainment-social level scored highly on extroversion, while those in the intense-personal level scored highly on neuroticism. This suggests that an individual's level of involvement in parasocial relationships is mediated by personality factors.

Maltby *et al.* (2004) found that those in the entertainment-social category were mentally healthy, but those in higher categories were prone to poor mental and physical health, suggesting that different parasocial levels are associated with different levels of mental stability.

MacDougal (2005) believes the adoration given to dead celebrities by some fans is like that found in charismatic religions, suggesting that religious worship and extreme levels of parasocial relationships may fulfil similar needs in some individuals.

Evaluation

- Maltby's (2002) entertainment-social dimension of parasocial relationships is consistent with Stever's (1991) observation that fans are attracted to media personalities due to their perceived ability to entertain.
- Research into the absorption-addiction model suggests people tend to become interested in celebrities at times when they are looking for direction in life, such as in their teenage years, and that such an interest can develop into addiction at a time of crisis, such as the loss of a loved one.
- Research into stalking may help to understand the behaviour, leading to the formation of effective therapies. Suggested treatments include psychotherapy to address underlying causes, with a role also for drug treatments, to reduce obsessive tendencies.
- Legal interventions, like trespassing orders, are the most effective way of dealing with celebrity stalkers, but can make stalkers even more obsessive, malicious and persecutory towards their targets.

RESEARCH IN FOCUS

Research into parasocial relationships often uses questionnaires. What strengths and weaknesses are there to this method of collecting data? In what ways would a) an interview, b) an experiment be i) superior, ii) inferior to using a questionnaire?

Attachment theory explanation

KEY TERM

Attachment theory – the tendency for parasocial relationships to be formed by those with insecure childhood attachments

An alternative explanation for parasocial relationships is that of **attachment theory**. People form different types of attachments to caregivers in infancy and these attachment types are seen as affecting relationships in later life. Those with insecure-resistant attachment type (see Chapter 3) are seen as most likely to form parasocial relationships because such individuals have a need for close emotional relationships, but ones in which there is reduced risk of rejection. In a parasocial relationship an individual can believe they have a close intimate bond to a media personality, but as the media personality is not aware of this relationship, there is no chance they will reject the individual.

People with secure attachments are able to develop loving, two-way relationships in real face-to-face relationships and thus have little need for parasocial relationships. People with insecure-avoidant attachments have difficulties trusting others and therefore indulge in behaviours designed not to create intimacy and thus are less likely to foster close emotional ties in either face-to-face or parasocial relationships.

Research

Kienlen *et al.* (1997) found that 63 per cent of stalkers experienced a loss of primary caregivers during childhood, usually due to parental separation, while more than 50 per cent reported childhood emotional, physical or sexual abuse by primary caregivers. This supports the idea that disturbed attachment patterns are related to extreme forms of parasocial relationships.

Cole & Leets (1999) found that adolescents with insecure-resistant attachments were more likely to have parasocial relationships with television media personalities than those with secure and insecure-avoidant attachments, supporting the idea that those with insecure-resistant attachments are more attracted to parasocial relationships.

McCutcheon *et al.* (2006) measured attraction to celebrities, finding that adults with insecure attachment types had positive attitudes towards obsessive behaviours and stalking, and also that pathological attachment types have a tendency to stalk, implying that stalking behaviour is related to childhood attachment patterns.

McCutcheon (2006) found no relationship between childhood attachment patterns and mild forms of celebrity worship, suggesting that it is only more intense forms of parasocial relationships that are related to attachment types.

Evaluation

- Ross & Spinner (2001) have indicated that there is variation in attachment styles across significant relationships. If this also applies to parasocial relationships it would mean linking a specific attachment pattern to such relationships is not valid.

  Stever (2013) proposes the existence of parasocial attachment, an additional form of attachment to infant–carer attachments and adult romantic attachments, which is progressed to through parasocial interaction (PSI) and then parasocial relationships (PSR). Such attachments are often formed by adolescents to media personalities to allow for the safe exploration of romantic feelings with a partner who will not place any demands on the teenager.
- The idea of attachment being related to parasocial relationships is supported by a key component of attachment theory, that of seeking proximity to the attachment figure. Those in parasocial relationships will often seek 'closeness' to their admired media personality.
- Individuals look to attachment figures as a 'safe base' and this can be seen as a feature of many parasocial relationships where an individual regards a media personality as such a safe base. Stever (2009) cites examples where individuals who have experienced loss of a loved one found comfort in parasocial relationships, for instance with pop stars who 'speak to them' through their lyrics.

STRENGTHEN YOUR LEARNING

1. Describe what is meant by parasocial relationships.
2. What has research suggested about parasocial relationships?
3. What other evaluative points can be made concerning parasocial relationships?
4. Outline McCutcheon's (2002) Celebrity Attitude Scale.
5. Summarise the main points of the absorption-addiction model.
6. Outline and evaluate McCutcheon & Houran's (2003) study of celebrity worship syndrome.
7. What does other research evidence suggest about the absorption-addiction model?
8. What other evaluative points can be made concerning the absorption-addiction model?
9. Summarise the main points of the attachment theory explanation.
10. What does research evidence suggest about the attachment theory explanation?
11. What other evaluative points can be made concerning the attachment theory explanation?

ASSESSMENT CHECK

1 Select from the descriptions A, B, C and D below to complete the table relating to levels of parasocial relationships. One description will be left over. **[3 marks]**

A Individuals have obsessive fantasies about a media personality

B Individuals stop using social media

C Individuals are attracted to media personalities because they are interesting

D Individuals feel an emotional connection with a media personality

Level of parasocial relationship	Description
Entertainment–social	
Intense–personal	
Borderline–pathological	

2 Outline two ethical issues researchers would need to consider when conducting research into virtual relationships. **[2 + 2 marks]**

3 Manon is shy and not confident in social situations. This and the fact that she is not considered physically attractive has prevented her from ever having an intimate face-to-face romantic relationship. Recently though she met Doug online and easily felt able to disclose honest personal information about herself, resulting in an intimate, meaningful relationship quickly developing.

Refer to features of the situation above to explain the effects an absence of gating has upon the nature of virtual relationships. **[3 marks]**

4 Outline and evaluate the absorption-addiction and/or attachment theory explanation of parasocial relationships. **[16 marks]**

5 Explain why it may be easier for individuals to self-disclose in virtual rather than face-to-face relationships. **[2 marks]**

SUMMARY

The evolutionary explanation for partner preference

- The evolutionary explanation for partner preferences sees a relationship between sexual selection and human reproductive behaviour, with different strategies for males and females due to different selective pressures.

Factors affecting attraction in romantic relationships

- Several factors affect attraction in romantic relationships, such as the level of self-disclosure, where personal information is relayed between partners.
- Another factor is that of physical attractiveness, with the matching theory proposing that individuals of similar perceived beauty are suited to each other.
- The filter theory sees choice of partners as affected by factors limiting the availability of people to select from, such as social demography, similarity in attitudes and complementarity.

Theories of romantic relationships

- Theories of romantic relationships include the social exchange theory, an economic explanation of relationship maintenance based on maximising profits and minimising costs, equity theory, based on motivation to achieve fairness and balance, and Rusbult's investment model of commitment, which views relationship satisfaction as dependent upon a consideration of perceived benefits, costs and the quality of possible alternative relationships.
- Duck's model of relationship dissolution sees the breakdown of relationships as occurring in a series of intrapsychic, dyadic, social and grave-dressing phases.

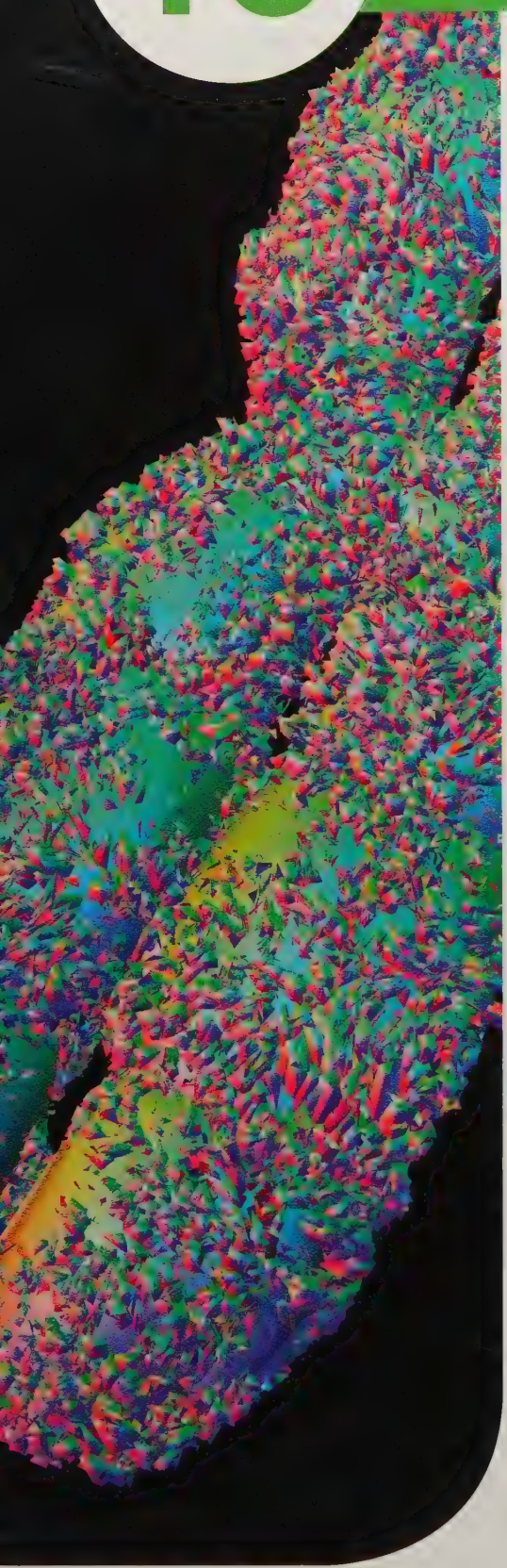
Virtual relationships in social media

- Virtual relationships are formed by non-physical interactions between people communicating via social media, with higher levels of self-disclosure and lower levels of gating compared with face-to-face relationships.

Parasocial (one-sided) relationships

- Parasocial relationships are one-sided relationships occurring with individuals outside of a person's real social network that can occur in different levels of involvement.
- The absorption-addiction model explains how parasocial relationships can progress from fascination with a media personality to a delusion of a real relationship.
- The attachment theory of parasocial relationships perceives a tendency for parasocial relationships to be formed by those with insecure childhood attachments.

10 Gender



Introduction

Sex concerns whether individuals are biologically male or female, while gender involves the social, cultural and psychological characteristics that go with being male or female. Interest has centred on sex roles, biological, cognitive, psychodynamic and behaviourist explanations of gender, along with atypical gender development.

Specific focus here will be upon:

1 Sex and gender
2 The role of chromosomes and hormones
3 Cognitive explanations for gender development
4 Psychodynamic explanation for gender development
5 Social learning theory as applied to gender development
6 Atypical gender development.

Understanding the specification

- The specification requires a knowledge of sex and gender that focuses on sex-role stereotypes, as well as androgyny and measuring androgyny, including the Bem Sex Role Inventory, as these elements are explicitly named.
- When studying the role of chromosomes and hormones in sex and gender, testosterone, oestrogen and oxytocin must be included, as these are specifically listed, as are Klinefelter's syndrome and Turner's syndrome when studying atypical sex chromosome patterns.
- Cognitive explanations of gender development need to focus on Kohlberg's theory of gender identity, gender stability and gender constancy, as well as gender schema theory, as these are all explicitly listed.
- Study of the psychodynamic explanation of gender development needs to concentrate on Freud's psychoanalytic theory, Oedipus complex, Electra complex, identification and internalisation, as these again are explicitly listed.
- The social learning theory as applied to gender development should focus upon the influence of culture and media on gender roles, as again these elements are specifically named.
- The specification additionally requires a study of atypical gender development that focuses upon gender dysphoria, especially biological and social explanations, which are explicitly referred to.

These are the basic requirements of the specification. However, other relevant material is included to provide depth and detail to your understanding.

'All through life there were distinctions – toilets for men, toilets for women; clothes for men, clothes for women – then, at the end, the graves are identical.'

Leila Aboulela (2005)

IN THE NEWS

Ψ The Psychological Enquirer

Figure 10.1 DJ Stephanie (formerly Simon) Hirst

Simon Hirst was a 39-year-old British DJ who hosted a popular breakfast radio show for 11 years until in September 2014 Simon disappeared from the airwaves without warning. Had Simon suddenly become unpopular? Been taken ill? Accused of some terrible crime? No, the simple fact was that Simon, who had known since about the age of eight that although physically male he felt psychologically more female, had decided to undergo gender reassignment treatment. Simon's employers 'did not think gender reassignment was suitable or commercially viable content' for radio shows.

Simon, half-way through the treatment, is now known as Stephanie and is doing well. Although numerous sources say Stephanie was suspended from work when it was revealed that Stephanie wanted to be a woman, the DJ says 'everyone was supportive' and Stephanie now 'feels genuinely alive', while before it felt like 'a square peg in a round hole'. Stephanie's former employers argue they were only thinking of the DJ's well-being and being 'on air' was not in Stephanie's best interests.

Stephanie is an example of someone with gender dysphoria a condition in which individuals have different physical sexual characteristics to the gender they feel they really are. Gender reassignment treatment for the condition is becoming more common – in 2009 143 surgeries were carried out in Britain compared with only 54 in 2000. Since 2000 865 state-funded sex change operations have been carried out, which suggests society is becoming more accepting of and sympathetic towards people with the condition. However, the true number of people with the condition is thought to be a lot higher, possibly a prevalence rate of 1 in every 5,000 people, with many individuals reluctant to publically admit their condition due to a fear of rejection and intimidation.

Hopefully the completion of treatment will see Stephanie Hirst's return as a radio DJ to become a positive role model for others with the condition.

10.1 Sex and gender

'One is not born, but rather becomes, a woman.'

Simone de Beauvoir (1949)

Sex and **gender** are not the same thing, although they do overlap. Sex concerns whether individuals are biologically male or female, while gender concerns the social, cultural and psychological (socially constructed) characteristics that relate to males and females. Androgyny is the idea that individuals can possess male and female characteristics and attempts have been made, as with the Bem Sex Role Inventory, to measure individuals' level of masculine and feminine features (see pages 426–429).

KEY TERMS

Sex – whether an individual is biologically female or male

Gender – the social and psychological characteristics assigned to males and females

'The emotional, sexual, and psychological stereotyping of females begins when the doctor says, It's a girl.'
Shirley Chisholm (1973)

Sex-role stereotypes

KEY TERM

Sex-role stereotypes – types of qualities and characteristics seen as appropriate for each sex

Sex-role beliefs concern the types of qualities and characteristics expected of members of each sex. These beliefs become **sex-role stereotypes** when they are applied as 'rules' to be followed by all individuals. Because these sex-role stereotypes are shared by a lot of people they can come to be seen as 'expected' and 'proper' qualities to be exhibited. Individuals are born biologically male or female, but sex-role stereotypes teach them what qualities are seen as masculine and feminine and thus create norms (expected forms of behaviour and attitudes) that people feel pressured to conform to. Therefore much of what is considered as masculine and feminine is learned as a result of socialisation processes (the passing on of beliefs, attitudes and behaviour from one generation to another).

Traditionally sex-role stereotypes for females involve being nurturing, co-operative, domestic, emotional and passive (non-aggressive) while sex-role stereotypes for males involve being strong, independent, physical, aggressive and unemotional. Perceived examples of stereotypes exhibited by members of a gender tend to be overstressed, for example males being aggressive while instances of aggression by females are downplayed. The holding of sex-role stereotypes also leads to an overemphasis of differences between genders, such as males being seen as more competitive and females as more co-operative.

Sex-role expectations are taught from an early age, such as in the way children of different genders are handled, with males being treated more physically. Different games/types of play are also seen as expected of different genders – girls playing quietly with dolls and boys playing more raucously with toy weapons, for instance. Boys and girls pick up sex-role stereotypes very quickly and not only conform to expected roles but also 'police' other children's roles. Individuals perceived as exhibiting incorrect stereotypes are subjected to hostility and pressure to assume 'correct' sex roles. At school boys and girls experience pressure to study 'gender-suitable' subjects, such as mathematics for boys and home economics for girls (indeed, it is noticeable how psychology is perceived as a more 'for girls' subject). Such expectations stretch into later life, with certain careers seen as more suitable for different genders, for instance nursing for females and engineering for males.

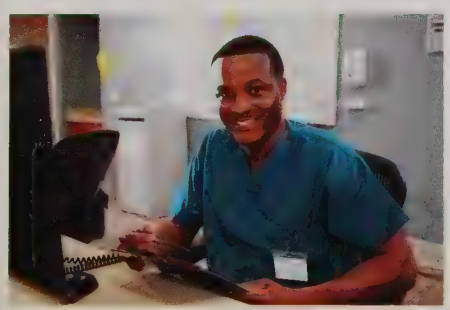


Figure 10.2 Historically, our sex-role stereotypes suggest to us that nurses may be female, while in reality there are many male nurses

The ways in which males and females are portrayed in the media, such as on TV and in magazines, etc., are powerful sources of sex-role stereotyping, both of children and of adults. The role of culture in socialising sex-role stereotypes is also strong, but although many stereotypes are common across cultures, such as males being aggressive and females being passive, considerable differences between cultures also exist, with even behaviours and attitudes regarded as masculine in one culture being seen as feminine in another culture. (For research studies concerning media and cultural influences that could be used to answer questions on sex-role stereotyping, see Section 10.5, Social learning theory as applied to gender development, page 450.)

Research

Seavey *et al.* (1975) told one in three adult participants that a three-month old baby dressed in a yellow jumpsuit was either a boy, a girl, or did not reveal the baby's gender. They were left to play with the baby in a room containing a ball (stereotypically male toy), a doll (stereotypically female toy) and a plastic ring (non sex-role stereotypical toy). Both male and female adults gave the baby the doll to play with if they believed it to be female, but were more likely to give it the non-stereotypical toy if they thought the baby was a boy. When the baby's gender was not known, female adults handled the baby more and both male and females adults tried to assess the baby's gender on the basis of its perceived strength. The results suggest that males and females react to babies differently according to what gender they believe them to be.

Langlois & Downs (1980) compared peers' and mothers' reactions to preschoolers' play with opposite-gender toys. When boys played with girls' toys, mothers accepted this, but male peers ridiculed and even hit them, demonstrating the intolerance of male peers at the time for cross-gender behaviour, and thus the strength of their influence on establishing gender roles. This was further supported by Archer & Lloyd (1982) reporting that three-year-old children who played the opposite sex's games were ridiculed by peers and ostracised, supporting the idea that peers police sex-role stereotyping.

Urberg (1982) told children aged 3–7 years stories that stressed sex-role stereotypical characteristics, such as bravery or caring, but without specifying the gender of the child in the story. After each story children had to state whether the characteristic illustrated was typical of girls, boys or neither. It was found that responses favoured sex-role stereotypes, such as bravery being a male characteristic and caring a female one. There was a tendency, which peaked at age five, for children to attribute positive characteristics to their own gender and negative ones to their non-gender. Older children showed an increasing tendency to see characteristics as both male and female. The results imply that children learn sex-role stereotypes at an early age, but that they change with age.

Eccles *et al.* (1990) reported that children were encouraged by their parents to play with gender-typical toys, supporting the idea that parents reinforce sex-role stereotypes. This was supported by Lytton & Romney (1991) finding that parents praised sex-role stereotypical behaviour in boys and girls, such as what activities they participated in.

Renzetti & Curran (1992) found that teachers gave reinforcements such as praise to boys for instances of 'cleverness', while girls received praise for 'neatness', supporting the view that teachers enforce sex-role stereotypes. This was further supported by Colley (1994) finding that in secondary schools pupils had a tendency to view individual subjects as either masculine or feminine, illustrating a further instance of sex-role stereotyping in education.

Sood *et al.* (2014) reported that only 12 per cent of British primary school teachers and 3 per cent of nursery teachers are male, due to early years teaching being seen as a female profession, their nurturing abilities and the unsuitability of males thanks to their perception as intimidating and threatening. The findings illustrate how sex-role stereotypes affect adult career choices.

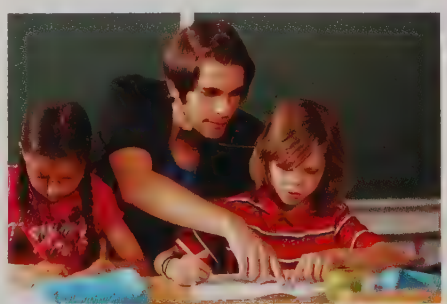


Figure 10.3 Only 12 per cent of British primary school teachers are male

Evaluation

The fact that sex-role stereotypes can differ substantially cross-culturally suggests that the characteristics associated with sex roles are culturally transmitted, which implies that environmental learning experiences are stronger than biological forces in determining sex-role stereotypes (see Mead (1935), page 456).

As evidence suggests that sex-role stereotypes are mainly learned through environmental experience, it implies that negative sex-role stereotyping could be addressed by providing learning experiences for children that reinforce the idea of positive sex roles being equally applicable to males and females.

One difficulty in addressing negative sex-role stereotyping, is that examples of stereotypes tend to be over-emphasised as 'typical behaviour', for instance girls crying, while similar behaviour in males is under-stressed as non-typical. Such 'typical' differences are then perceived as 'natural' differences, thus reinforcing the stereotype, making it harder to break down.

The media are subjected to criticism of their stereotypical presentation of sex roles and so their portrayals have become less stereotyped. However, some argue such portrayals are still stereotyped, but more subtly so, and continue to exert harmful effects, especially in their presentation of negative female sex-role stereotypes.

Although cultural influences result in different forms of sex-role stereotypes in different cultures, with globalisation and the breaking down of cultural beliefs and practices we may see a movement towards uniform sex-role stereotypes in all cultures.

Categorising behaviours, occupations, qualities, etc. as either masculine or feminine may place restrictive barriers on positive roles that both males and females could play in society, like males having a primary role in the nurturing of children (only 3 per cent of nursery teachers are currently male) or females making contributions as scientists (as of 2019, only one British woman has ever won a Nobel prize for science).

'Androgyny is not trying to manage the relationship between the opposites, it is simply flowing between them.'

Dr June Singer (1976)

Androgyny

KEY TERM

Androgyny – co-existence of male and female characteristics within the same individual

Androgyny involves having characteristics perceived to be both masculine and feminine. This can be beneficial, as individuals may act in a stereotypically masculine way in some situations, such as being domineering in the workplace, and act stereotypically feminine in other situations, such as being nurturing at home. They may also simultaneously blend elements of both.

Traditionally, individuals were seen as masculine or feminine, and it was assumed that those with a good fit with their gender role – that is, masculine males and feminine females – were better adjusted and psychologically healthier. Many psychological tests built assumption into them, making it impossible to score as highly masculine *and* highly feminine, i.e. to be androgynous.

Olds (1981) believed that androgyny is a higher developmental stage reached only by some, while Bem (1983) argued that androgynous individuals have a different cognitive style and adopt behaviours, when necessary, that are independent of gender concepts. Therefore, in terms of cognitive schema theory (which explains how sex-role stereotypes are maintained and transmitted to other members of a culture), androgynous people are gender aschematic (not influenced by sex-role stereotypes), in line with Old's explanation, as individuals can become androgynous only when they perceive the world without gender stereotypes.

Orlofsky (1977) has a behavioural explanation for androgyny, seeing it as learned through reinforcement, allowing individuals to acquire masculine and feminine qualities applicable to different situations. Therefore androgyny is seen more in behavioural than in cognitive terms.

Perhaps because young children's ideas about sex roles are rigid, there is little sign of androgyny among children before nine years of age. But from 11 years onwards signs of androgyny appear, with children showing variation in what they believe masculinity and femininity are.

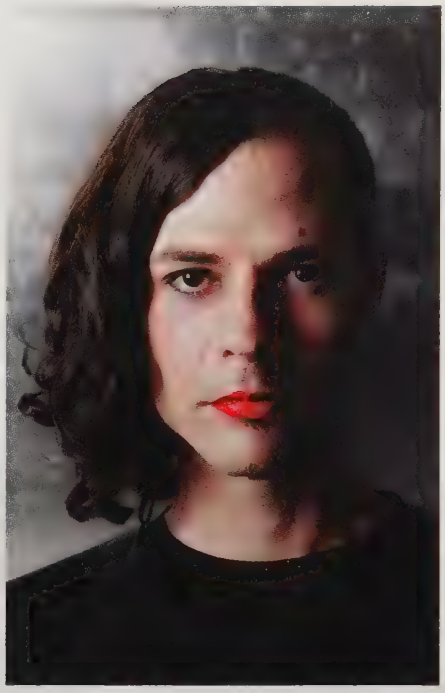


Figure 10.4 Androgyny involves having both male and female characteristics

Bem Sex Role Inventory

By the early 1970s the view that individuals were either exclusively masculine or feminine was being challenged, and masculinity and femininity were argued to be independent dimensions rather than opposite ends of the same continuum (range). Bem (1975) developed the androgynous hypothesis, which saw androgyny as a positive and desirable condition. A different kind of test was needed to incorporate this notion and the **Bem Sex Role Inventory** (BSRI), designed to measure androgyny, was introduced. This self-report consists of 60 items rated on a seven-point scale: 20 items relate to stereotypically masculine characteristics, 20 to stereotypically feminine characteristics, and 20 are gender-neutral filler items. Individuals score separately for masculinity and femininity to calculate their overall type. The test was revised in 1977 to create four categories of person:

1 **Masculine** – high masculinity, low femininity.
2 **Feminine** – low masculinity, high femininity.
3 **Androgynous** – high masculinity, high femininity.
4 **Undifferentiated** – low masculinity, low femininity.

A prediction derived from the BSRI is that androgyny is a better indicator of psychological well-being/mental health than just having masculine or feminine qualities and evidence supports this view.

KEY TERM

Bem Sex Role Inventory – a self-report measure of masculinity–femininity and gender role

ON THE WEB

Want to know how androgynous you are? Then take a self-marking BSRI internet test that supplies a score for masculinity, femininity and androgyny. Find the test at:

https://www.psytoolkit.org/survey-library/sex-role-bem.html

CLASSIC RESEARCH

Psychological androgyny and personality adjustment in normal and clinical populations – Carol Burchardt & Lisa Serbin (1982)

Androgyny involves having masculine and feminine characteristics, which, in her androgyny hypothesis, Sandra Bem saw as desirable. The researchers in this investigation were interested in testing this by investigating the relationship between androgyny and mental health – if Bem was correct then androgyny would be positively correlated with good mental health.

Figure 10.5 Dr Lisa Serbin, along with her co-researcher Carol Burchardt, provided evidence that androgyny is associated with good mental health

Aim

To see whether androgyny was associated with positive mental health in both normal and psychiatric populations.

Procedure

The participants were 106 female and 84 male undergraduates, and 48 female and 48 male psychiatric inpatients.

All participants were administered the BSRI and the Faschingbauer Abbreviated Minnesota Multiphasic Personality Inventory, in order to be classified as masculine, feminine, androgynous or undifferentiated personalities.

Findings

Androgynous females scored significantly lower for depression and social introversion than feminine females, and in the college sample were also lower on the schizophrenia and mania scales than masculine females.

In the hospitalised male sample, this pattern was partially sustained, with androgynous and masculine participants significantly less deviant than feminine males, and lower on depression.

In the group of college males, androgynous males scored lower on social introversion than feminine males.

Conclusions

Being androgynous is positively correlated with good mental health, especially concerning levels of depression.

Evaluation

The results indicate that sex-role conformity may relate differently to personality development and psychological functioning for males and females.

Androgynous personalities score well in mental health terms, but masculine types scored equally well, which suggests that masculinity also assists positive mental health.

Research

Bem (1974) used the BSRI to measure androgyny, finding 34 per cent of males and 27 per cent of females to be androgynous, which suggests a sizeable minority of people are predominately androgynous rather than being masculine or feminine.

Flaherty & Dusek (1980) found that androgynous individuals have a higher degree of self-esteem, a better sense of emotional well-being and more adaptable behaviour, backing up the idea of psychological androgyny indicating psychological well-being. This was supported by Lubinski *et al.* (1981) finding that androgynous individuals report greater emotional well-being.

Taylor & Hall (1982) suggested that masculinity, in males and females, is a better predictor of psychological well-being than androgyny, which was supported by Taylor (1986) reporting that psychological well-being is more strongly related to masculinity than femininity on the BSRI (a view supported by Burchardt & Serbin (1982) – see Classic research above).

Peters & Cantrell (1993) used the BSRI to find that androgynous females had the best quality of relationships, supporting the idea of androgyny

being a positive condition and being associated with higher interpersonal functioning than individuals who are predominately masculine or feminine.

Rose & Montemayor (1994) found that 25–30 per cent of US high school students defined themselves as androgynous, with more girls than boys showing this pattern, and more girls falling into the masculine category than boys into the feminine category. This supports the idea that sex roles are less rigid in older children.

Evaluation

- The BSRI test has good test-retest reliability, as it produces consistent results when used on different occasions with the same participants, but there are some doubts about its validity – it was created from data generated by American students in the 1970s about what they perceived as desirable characteristics in men and women. The test may therefore lack external validity in terms of being relevant today and to people from other cultures.
- Bem saw androgyny as positive and desirable, but androgyny might not always be positive, as androgynous individuals can exhibit negative masculine characteristics (such as being over-aggressive) and feminine characteristics (being too timid) in certain situations.
- Although Olds (1981) states that androgyny is a higher stage of development, no explanation is given as to why this occurs only in some individuals, or how such development occurs in these individuals.
- Bem argues that androgyny is a psychologically healthy state. However, it could equally be argued that androgyny is not psychologically healthy as it pressurises individuals to reach levels of adequacy in terms of both masculinity and femininity, rather than on a more traditional single level of competence, i.e. being either masculine or feminine.
- It may be that because of the masculine bias in Western cultures, where masculine qualities like independence and competitiveness are more valued than feminine ones such as co-operation and nurturing, masculine qualities are seen as superior even within androgynous individuals. This would fit research findings of masculinity being found to be at least equally associated with positive mental health in comparison with androgyny.
- Reducing masculinity and femininity down to single scores is over-simplistic. More contemporary approaches to androgyny attempt to measure additional aspects of gender-related behaviour, such as interests and abilities, rather than simply personality characteristics.

YOU ARE THE RESEARCHER

Design a questionnaire on androgyny, by devising ten questions assessing the level of femininity in males and females and ten questions assessing the level of masculinity in males and females.

Make questions concise, clear and unambiguous.

How would each question be scored? How would the data be interpreted to make sense of it?

STRENGTHEN YOUR LEARNING

1. What is the difference between sex and gender?
2. Give one example each of a sex-role stereotype for both males and females.
3. Where do sex-role stereotypes come from?
4. Summarise what research studies suggest about sex-role stereotypes.
5. What other evaluative points can be made concerning sex-role stereotypes?
6. How might being androgynous be beneficial to a person?
7. Outline Bem's Sex Role Inventory.
8. Outline and evaluate Burchardt & Serbin's (1982) study of androgyny and mental health.
9. Summarise what research studies suggest about androgyny.
10. What other evaluative points can be made concerning androgyny?

'The test for whether or not you can hold a job should not be the arrangement of your chromosomes.'

Bella Abzug (1984)

'He suffers from TMT – too much testosterone.'

Robert L. Slater (2014)

KEY TERMS

Chromosomes – structures of nucleic acids and protein found in the nucleus of most living cells that contain genetic information

Hormones – chemical messengers that are released into the bloodstream from glands

Testosterone – a steroid hormone that stimulates development of male secondary sexual characteristics

Oestrogen – a group of steroid hormones which promotes the development and maintenance of female characteristics in the body

Oxytocin – a polypeptide hormone which acts also as a neurotransmitter that controls key aspects of the reproductive system

Figure 10.6 The sex chromosomes X and Y determine human biological sex

10.2 The role of chromosomes and hormones

Humans have 23 pairs of **chromosomes**, each pair carrying genes that control different characteristics. Biological sex is determined by the sex chromosomes X and Y (on the 23rd chromosome pair), with XX combination for females and XY combination for males (see Figure 10.6). Sex chromosomes contain genetic material that controls development as a male or female. During this process, sex **hormones**, such as **testosterone**, **oestrogen** and **oxytocin**, are produced that direct the majority of sexual development.

The role of testosterone

Testosterone is a steroid hormone that stimulates development of male secondary sexual characteristics. Although it is found predominately in males, females also produce testosterone, with about 10 per cent of the amount of that found in males. The influence of testosterone on sexual differentiation of a foetus begins early in pregnancy and involves internal and external genitalia, as well as the brain and behaviour. The gonads are sex glands, testes in males and ovaries in females, and these are originally identical in both XY and XX embryos. However, in XY individuals, genetic information on the Y chromosome causes the gonads to become testes, and by week 8 of gestation they produce hormones, particularly the primary androgen, testosterone. If the gonads do not become testes, they become ovaries, which do not produce significant amounts of hormones prenatally.

The SRY gene on the Y chromosome controls whether gonads become ovaries or testes. Consequently, XY foetuses have higher levels of testosterone than XX foetuses, particularly between 8 and 24 weeks of gestation. Between then and birth, gonadal hormone levels are low in both sexes, but a surge of testicular hormones after birth makes testosterone once again higher in boys than in girls, for about the first six months. When released, testosterone causes the development of male sex organs, but also acts on the hypothalamus; without this, the brain develops as a female type.

Testosterone is associated with masculinisation of the brain, such as the development of brain areas linked to spatial skills. Testosterone is also associated with male-type behaviours such as competitiveness and aggressiveness.

There are differences in the hypothalamus of males and females, with the sexual dimorphic nucleus bigger in males. It is believed that these differences occur through the action of sex hormones, such as testosterone, though this is not a universal view.

Research

Young (1966) gave male hormones, including testosterone, to female mice (and female hormones to male mice). The effect was an irreversible change in usual gender-related behaviours, suggesting that hormones like testosterone have a key role in determining behaviour. Testosterone may alter the sexually dimorphic nucleus (SDN) in the brain, as male rats had a larger SDN than females. Further support came from Edwards (1968), who found that injections of testosterone in neonate female mice made them act with increased aggression when given testosterone as adults. However, control females only given testosterone as adults did not react in this way, suggesting that testosterone masculinises androgen-sensitive neural circuits underlying aggression in the brain.

Money & Ehrhardt (1972) reported on a sample of girls whose mothers took drugs containing testosterone during pregnancy. They reported that the girls exhibited male-type behaviours, for instance playing energetic sports, and an absence of female-type behaviours, like playing with dolls, which suggests that testosterone has a strong influence on gender behaviour.

Deady *et al.* (2006) measured testosterone levels and gave the BSRI to women between 25 and 30 years of age, asking additional questions about maternal personality, such as the importance of having children, maternal broodiness, reproductive ambition and the importance of a career. High testosterone levels negatively correlated with low measures of maternal personality and reproductive ambition, which suggests that maternal drive is affected by testosterone.

Goel & Bale (2008) gave testosterone injections to female mice postnatally (after birth) and/or just before puberty, finding reduced physiological and behavioural stress responses compared with female mice not given testosterone injections. As anxiety and depressive disorders are more common in females and the onset of anxiety and depressive disorders occurs at key developmental times when the brain is sensitive to the influence of hormones, the results suggest that sex differences in stress levels may be due to lowered testosterone levels in females.

RESEARCH IN FOCUS

Deady *et al.*'s (2006) study was a correlational study of maternal personality and testosterone levels.

What is a correlational study?

The results indicated a positive correlation. Explain in the context of this study what this means.

Why can a correlation not show causality?

The study was reliant on a question-and-answer technique. What disadvantages are there to this method? How could these disadvantages be overcome?

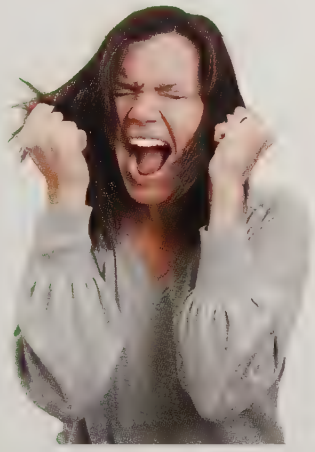


Figure 10.7 Oestrogen plays a role in premenstrual tension

The role of oestrogen

Oestrogen is a group of steroid hormones, such as oestradiol, oestrone and oestriol, which promotes the development and maintenance of biologically female characteristics of the body and is seen later to regulate menstruation. Although primarily a female hormone, small amounts of oestrogen are produced in males. Aside from influencing physical changes to the body, such as the development of breasts, oestrogen also has psychological and behavioural effects, such as premenstrual tension (PMT), which is associated with emotionality and irritability as well as lapses in self-control. The diminishing of oestrogen levels is associated with the onset of menopause in women. As with testosterone having a role in masculinisation of the brain, similarly oestrogen plays a role in feminising the brain, with oestrogen promoting neural interconnections for a more 'distributed' female brain (equal use of both hemispheres). Oestrogen is also associated with behaviours such as sensitivity and co-operation.

Research

Albrecht & Pepe (1997) found that increasing oestrogen levels in pregnant baboons led to heightened cortisol production, which assisted the development of organs and tissues in foetuses and led to reduced levels of miscarriage by regulating progesterone levels. This suggests that oestrogen plays a key role in maintaining and promoting pregnancy.

Fitch & Denenberg (1998) found that suppressing production of oestrogen by removing ovaries from female rats as late as 16 days after birth led to an increased corpus callosum brain area (a sexually dimorphic cortical brain structure) in adults, though treatment with oestrogen reduced this effect. The findings suggest that there is a later sensitive period for oestrogen-regulated feminisation of the brain compared with testosterone-regulated masculinisation.

Alonso & Rosenfield (2002) reported that oestrogen is necessary for the normal development of body areas and tissues, like the neuroendocrine–gonadal axis, associated with puberty in both males and females. This supports the idea that oestrogen is associated with the transformation into being sexually active and able, not just in females but in males, too.

Finkelstein (2013) gave 400 men aged 20–50 years with normal testosterone levels injections that reduced their testosterone levels to pre-puberty levels. Half the participants then took various doses of testosterone for 16 weeks, while the other half took similar doses also for 16 weeks, but took an additional drug to block the conversion of testosterone into oestrogen. Participants with lower levels of oestrogen had a reduced libido (sex drive), which suggests that male sexual desire is actually related to oestrogen, more commonly perceived as a female hormone.

The role of oxytocin

Oxytocin is a polypeptide hormone that acts also as a neurotransmitter and is produced in (and outside of) the brain by both males and females to control key aspects of the reproductive system. Its action is greater in females as it synergises (combines) with oestrogen to enhance each other's effect. Oxytocin helps facilitate childbirth (by helping to stimulate contractions) and breastfeeding (by stimulating the 'let down' reflex); it also increases five-fold during sex (though it drops in males immediately after orgasm). Oxytocin also affects female social behaviour, such as mate selection, 'nesting' behaviour (preparing the house for new offspring), monogamy and pair bonding, as well as the nurturing, acceptance and protection of offspring.

Research

Van Leengoed *et al.* (1987) injected an antagonist of oxytocin into female rats shortly after birth to inhibit oxytocin production. Mothers treated in this way showed a delay in maternal behaviours, such as picking up and grooming their pups. When the effects of the antagonist wore off, normal maternal behaviour was seen. The findings support the idea of oxytocin being involved in the promotion of maternal behaviour.

Elbourne *et al.* (2001) assessed the administration of oxytocin in 3,000 participants during the third stage of labour (a time associated with birth complications, especially during delivery of the placenta), to find evidence of reduced blood loss, highlighting the role oxytocin plays in achieving successful childbirth.

Insel (2001) found that administering oxytocin to female prairie voles, a species known to be monogamous (exclusive pair-bonds), led to them forming long-term mating partnerships, while similar administration of oxytocin to female montane voles, a species known to be promiscuous (having multiple sexual partners), produced no such effect. This suggests oxytocin helps promote pair-bonding in monogamous species such as humans.

White-Traut *et al.* (2009) measured oxytocin levels in saliva produced by females before, during and after breastfeeding. Oxytocin levels were highest immediately before feeding, decreased at initiation of feeding and rose again 30 minutes after feeding, illustrating oxytocin's important role in promoting breastfeeding.

Evaluation

Much of the research on the role of hormones in sex and gender is conducted on animals, but the extent to which results can be generalised to humans is debatable. The physiology of humans and animals, like rats and mice, especially in terms of brain functioning is very different and human development and behaviour are much more subject to social and cultural influences.

Animal experimentation is often conducted, as similar studies with humans would be unethical. However, ethical concerns are raised with animal experiments, like van Leengoed *et al.*'s (1987) study which delayed maternal care of young. Such studies may be justifiable in terms of a cost–benefit analysis, for example that such research leads to useful practical applications.

It is simplistic to think of testosterone being a male hormone and oestrogen and oxytocin being female hormones; research shows all three exert important influences on both males and females.

It is also simplistic to perceive single hormones as having exclusive effects upon sex and gender. Hormones are often part of biological mechanisms that exert multi-faceted and complex actions upon the body and behaviour, for example the interaction of sex chromosomes, the SRY gene and gonadal hormones.

A main difficulty in researching the role of hormones on sex and gender in humans is doing so in a non-invasive way. However, White-Traut *et al.*'s (2009) use of measuring salivary hormonal levels offers such a method, as long as baseline measurements are established so that comparisons can be made after hormone levels are manipulated.

Isotocin is a type of oxytocin found in non-mammals, such as birds, which causes females to respond to male mating songs. Its action in humans is not known, but as it acts primarily on auditory rather than visual stimuli in females it may explain why some individuals are attracted to male 'crooning' singing voices, such as that of Nat King Cole.

Figure 10.8 Is the crooning of Nat King Cole attractive to some individuals due to the action of oxytocin?

PSYCHOLOGY IN THE REAL WORLD

Research into the role of hormones in sex and gender has led to beneficial practical applications. For example, the administration of oxytocin during childbirth reduces haemorrhaging (bleeding), decreasing mortality rates in both mothers and infants. Oxytocin also helps to start and keep labour going, as well as assisting in secreting milk to allow mothers to breastfeed.

Testosterone is given to men with problems attaining and maintaining an erection or with a low libido. Testosterone also increases libido in women, especially those whose sex drive lessens after having a hysterectomy or who are post-menopausal.

Oestrogen supplements offer increased protection to those at risk of strokes and are often given to post-menopausal women to protect against osteoporosis. There is research being undertaken into the ability of oestrogen to protect against Alzheimer's. Oestrogen also helps boost male libido and so is used in sex-drive therapies.

All hormone therapies carry risks of side effects and should be administered only on medical advice.

Figure 10.9 One beneficial use of oxytocin is in secreting milk in breastfeeding mothers

Atypical sex chromosome patterns

Most humans are born with XX (female) or XY (male) sex chromosomes, therefore any combinations of sex chromosomes other than these are atypical. Both Klinefelter's and Turner's syndromes are examples of such **atypical sex chromosome** conditions.

Klinefelter's syndrome

Klinefelter's syndrome (KS) is a genetic condition, which affects about 1 in every 750 males and involves having an extra X chromosome (thus they are XXY). The condition is named after Dr Harold Klinefelter, who reported the condition in the USA in 1942. Males with this condition have small testes that produce lower amounts of testosterone before birth and during puberty, which results in normal male sexual characteristics not developing fully. Typically, those with the syndrome lack the ability to grow facial and pubic hair, develop breast tissue, have low muscularity and low fertility levels (see Figure 10.10). There is also a tendency for long legs and arms in ratio to their torso. Psychological effects include poor language skills, which affects reading ability, and a noticeably passive (quiet) temperament, as well as attention problems and an increased risk of anxiety disorders and depression.

Mosaic Klinefelter's syndrome (MKS) involves males having the extra X chromosome in only some of their cells. Sufferers tend to be less affected (how affected depends on how many cells have the extra X chromosome). About 1 in 10 individuals with KS have MKS (about 1 in 7,500 men). Very rarely males with KS can have several extra copies of the X chromosome, or even extra copies of both X and Y chromosomes in all their bodily cells, for example XXYY or XXXYY, etc. Symptoms are more severe in these cases.

Although a genetic condition, KS is not inherited from parents but occurs during meiosis, the process of cell division that produces egg and sperm cells. An error in cell division called nondisjunction causes an egg or sperm cell to have an extra copy of the X chromosome, leading to the embryo produced at conception having an extra copy of the X chromosome in each of its body cells (a process known as sex chromosome trisomy). MKS occurs similarly, where problems with cell division occur during early development in the womb leading to some body cells having an extra copy of the X chromosome.

Medical complications can arise from KS, such as cardiovascular, circulatory and respiratory conditions, as well as diabetes and renal problems.

Older parents are more likely to have a child with KS and sufferers are generally treated with testosterone supplements, allowing them to live relatively normal lives, though with below-average lifespan.

Research

Simpson *et al.* (2003) found that behavioural and language difficulties resulting from having KS could be successfully treated with androgen therapy, such as testosterone supplements, and psychological counselling, with greater improvements seen the earlier the treatment was given. This supports the idea that some of the detrimental effects of KS can be successfully counteracted.

KEY TERMS

Atypical sex chromosome patterns – individuals with sex chromosome patterns other than XX or XY

Klinefelter's syndrome – a chromosomal condition that affects male physical and cognitive development

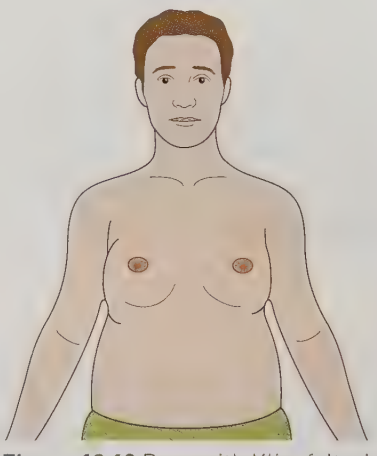


Figure 10.10 Boys with Klinefelter's syndrome often develop breast tissue

Swerdlow *et al.* (2005) investigated mortality in men diagnosed with KS in Britain from 1959 to 2003, finding 461 of 3,518 patients had died (13 per cent), which was at a greater level than for similar non-KS patients. Major causes of death were from cardiovascular, nervous system and respiratory diseases, as well as diabetes, epilepsy, renal and circulatory disorders, which suggests KS patients have raised mortality levels from several specific causes that reflect hormonal and genetic mechanisms.

DeLisi *et al.* (2005) subjected 11 KS participants and 11 non-KS controls to a psychiatric interview, cognitive tests and an MRI scan. Ten of the KS males had some form of psychiatric disturbance and generally KS males had smaller frontal lobes, temporal lobes and superior temporal gyrus brain areas, which might explain the language deficits noted in the KS participants. This suggests a biological basis to the problems experienced by some KS males.

Stochholm *et al.* (2012) investigated criminal patterns in 1,005 Danish men with standard KS and the XYY version, finding men with KS had higher conviction rates for sexual abuse, burglary and arson and lower conviction rates for traffic and drug offences than non-KS controls and these findings were greater for those with the XYY version of KS. However, when adjustments were made for socioeconomic variables (level of education, fatherhood, cohabiting with a partner, etc.), conviction levels were similar to controls (apart from sexual abuse and arson). This suggests increased criminality as a result of poor socioeconomic conditions endured by those with the condition rather than the condition itself.

ON THE WEB

The Klinefelter's Syndrome Association UK hosts a website that offers useful information about the condition, links to other related sites, news articles, etc. Find them at:

www.ksa-uk.net/

Turner's syndrome

KEY TERM

Turner's syndrome – a chromosomal condition that affects female physical development

Turner's syndrome (TS) is a genetic condition that affects about 1 in 2,200 females. The condition is named after Dr Henry Turner, who reported the syndrome in 1938, and involves having only one complete X chromosome in each cell; the second X chromosome is either missing or incomplete. The condition occurs at conception, indeed most conceptions occurring with one X chromosome missing end in miscarriage (one in ten miscarriages in the first trimester (third) of pregnancy are due to TS). Mosaic types of TS also exist (MTS) where one copy of the X chromosome is missing or incomplete in some but not all cells.

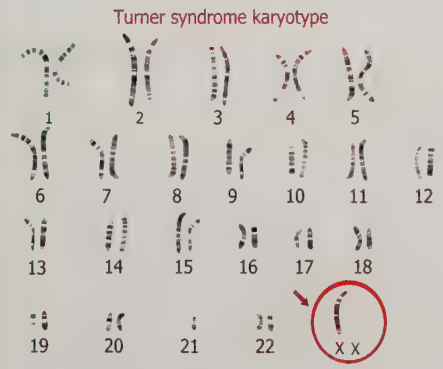


Figure 10.11 The chromosones for Turner's syndrome

Prenatally lymphoedema can occur, where fluid leaks into tissues causing swelling, particularly in the neck, hands and feet. Physical effects that emerge after birth are short stature, down-slanting eyes and a short, webbed-like neck, as well as a broad chest, lots of moles and organ abnormalities, especially of the heart and kidneys.

The main deficiency though is non-functioning ovaries, which results in girls with TS not developing breasts during puberty, not having periods and being infertile. However, about one third of girls with the condition have some typical changes during puberty and about 1 in 200 with the condition can get pregnant naturally and most will have a normal vagina and uterus and will enjoy a normal sex life.

Medical complications can arise from TS, such as heart conditions, high blood pressure, urinary complaints, vision and hearing problems and osteoporosis (thinning of the bones). There are few psychological problems with TS, aside from potential problems with social adjustment due to physical appearance (for instance, possible bullying) and a few girls having minor learning difficulties (indeed, some girls may even have advanced reading ability).

TS is not more common in girls born to older women and it is rare to have a second child with Turner's syndrome. Treatment usually consists of administering growth hormone, as well as oestrogen and progesterone supplements, which allows sufferers to live relatively normal lives with only slightly reduced average life span.

Research

Price *et al.* (1986) performed a longitudinal study for 17 years of 156 females with TS who survived infancy, finding that 15 died in that time (9 per cent), compared with an expected 3.5 deaths in matched non-TS females. The major causes of death were cardiovascular and circulatory conditions, with the findings confirming the notion that TS sufferers have a shorter than average lifespan.

Brown *et al.* (2002) performed MRI scans of 26 girls with TS and 26 gender- and age-matched non-TS girls, finding that girls with TS had smaller posterior cerebral and cerebellar brain areas. There were no differences between TS girls who had a maternally inherited or a paternally inherited X chromosome. The results suggest that TS affects growth of certain brain areas, which may in turn be related to the developmental effects seen with the disorder.

Hewitt *et al.* (2013) reported that 30 pregnancies had resulted from cryopreservation (extraction and freezing) of eggs taken from females with TS, but only if they were extracted from pre-pubertal girls. The progressive ovarian atresia (shrinking of the ovaries) that occurs with TS females means egg extraction does not result in successful pregnancies in post-pubertal females.

Quigley *et al.* (2014) gave 123 girls with TS either oestrogen supplements or a placebo from ages 5 to 12. There were no differences in physical development between the two groups before age 8.5 years, but between 8.5 and 12 years those given oestrogen had earlier and greater breast development compared with non-TS girls, though no other differences in puberty developments were noted. The findings suggest oestrogen supplements are beneficial between ages 8 and 12 and have a great psychosocial benefit in normalising breast development for girls with TS.

ON THE WEB

The Turner Syndrome Support Society hosts a website containing up-to-date information about the condition, news articles, web links, etc. Find them at:

http://tss.org.uk/

Evaluation

- The extraction of eggs from pre-pubescent girls with TS offers a means of them later attaining pregnancy and the enhanced psychosocial benefits that would bring. However, from an ethical point of view, care must be taken to fully brief individuals about the technique and to gain informed consent from all involved parties.
- The comparison of people with typical and atypical chromosome patterns allows researchers to see what aspects of biological development and behaviour are under the influence of genetics and chromosomes.
- Research into patients with KS and TS has seen the development of therapies to improve the quality and duration of their lives. For example, treating the stunted physical growth often seen with TS by the application of growth hormone and the treatment of KS with testosterone, which has seen those with the condition develop a less passive nature.

Although the effects of both KS and TS originate directly from biological influences of genes and chromosomes, some effects are more environmental in nature. For instance, higher criminality has been seen in males with KS, but this may be due to other socio-economic factors. Similarly, females with TS may suffer psychologically through not being able to have children.

Both KS and TS can be diagnosed prenatally based on cytogenetic analysis of a foetus. However, this can be regarded ethically as a socially sensitive area, as such a diagnosis may incur a demand for or bring pressure upon prospective parents to ask for an abortion.

As both KS and TS are biological conditions caused by atypical chromosome patterns, research into them is justifiable on the basis that it could bring about effective gene therapies to correct the conditions.

ON THE WEB

Watch a video of Dan, someone with Klinefelter's syndrome, talk about his experience of dealing with the condition at **www.youtube.com**. Search for 'Project 47XXY, Turner's Syndrome Diaries'.

There is also a video produced by the Turner Syndrome Foundation, where Susan, Suzanne, Kym, Jean and Sam talk about their experiences with the condition. Find it at **www.youtube.com**. Search for 'Overview, Turner's Syndrome'.

You can watch Emily talk about her experiences with having the syndrome at **www.youtube.com**. Search for 'My Story – Emily Tarbox'.

STRENGTHEN YOUR LEARNING

1. Explain how biological sex is determined by sex chromosomes.
2. Outline the role of i] testosterone, ii] oestrogen, iii] oxytocin in sex and gender.
3. Summarise what research suggests about the role of i] testosterone, ii] oestrogen, iii] oxytocin in sex and gender.
4. What other evaluative points can be made concerning the role of chromosomes and hormones in sex and gender?
5. What practical applications have been formed from research into the role of hormones in sex and gender?
6. What causes Klinefelter's syndrome? What behavioural and psychological effects does it have? How does mosaic Klinefelter's syndrome differ from the condition?
7. Summarise what research suggests about Klinefelter's syndrome.
8. What causes Turner's syndrome? What behavioural and psychological effects does it have?
9. Summarise what research suggests about Turner's syndrome.
10. What other evaluative points can be made about Klinefelter's and Turner's syndromes?

ASSESSMENT CHECK

1 Harold, aged 24, is a shy young man who has never had to shave as he doesn't grow facial hair. He has been told by doctors that he is infertile and can never father children. Harold struggled at school as his reading ability is quite poor. Medical tests have revealed him to have a sex chromosome pattern of XXY.

a) Identify the atypical sex chromosome syndrome that Harold has. **[1 mark]**

b) With reference to the scenario above, explain how this syndrome occurs. **[3 marks]**

2 Select which two of the following definitions A, B, C and D concerning chromosomes and hormones are correct:

A Oestrogen is mainly a female hormone, but small quantities are produced in males

B Chromosomes are chemical messengers that are released into the bloodstream from glands

C Testosterone is made of nucleic acids and protein found in most living cells

D Oxytocin is a hormone, which also acts as a neurotransmitter, that controls key aspects of the reproductive system **[2 marks]**

3 The following table contains scores for masculinity and femininity for participants taking the Bem Sex Role Inventory test.

Participant	Score for masculinity (out of 140)	Score for femininity (out of 140)
1	100	110
2	65	80
3	40	70
4	80	60
5	70	70
6	65	80
7	45	90
8	55	80

a) Calculate the mean score for masculinity. **[1 mark]**

b) Calculate the median score for masculinity. **[1 mark]**

c) Calculate the mean score for femininity. **[1 mark]**

d) Calculate the modal score for femininity. **[1 mark]**

4 Explain what is meant by androgyny. **[2 marks]**

5 Discuss sex-role stereotypes. **[16 marks]**

'Sugar and spice and all things nice, that's what little girls are made of, frogs and snails and puppy dogs' tails, that's what little boys are made of.'

Roud Folk Song Index, early 1800s

10.3 Cognitive explanations for gender development

KEY TERMS

Cognitive explanations for gender development – theories of gender development that focus on how children's thinking about gender changes in qualitatively different stages

Gender identity – first stage of Kohlberg's theory that focuses on children's recognition of being male or female

Kohlberg's theory – an explanation of gender development that perceives children as developing an understanding of gender in stages, with gender-role behaviour apparent only after an understanding emerges that gender is fixed and constant

Cognitive explanations of gender development focus on how children's thinking about gender develops, with thinking occurring in qualitatively different stages. **Gender identity** is seen to result from children actively structuring their own experiences, rather than being a passive (non-interactive) outcome of social learning. **Kohlberg's theory** of **gender constancy** sees thinking and understanding as the basis behind gender identity and gender role behaviour. Kohlberg perceives children as developing an understanding of gender in three distinct stages, with gender role behaviour apparent only after an understanding emerges that gender is fixed and constant. **Gender schema theory** shares the same cognitive view of gender understanding, but perceives children having schemas for gender at an earlier stage than Kohlberg.

An important difference between the two theories is that schema theory believes that children only need gender identity to develop gender-consistent behaviours, while Kohlberg sees the acquisition of gender constancy as necessary first.

Kohlberg's theory of gender constancy (1966)

Other theories of gender role development, such as social learning theory (SLT), assume that children know which gender they are and proceed to learn appropriate roles. Kohlberg sees such knowledge arising from children actively constructing an understanding of the world through interacting with it.

Kohlberg's theory was influenced by Piaget's cognitive development theory, which saw children progressing through stages of understanding as their level of biological maturity allowed them to do so. Gender concepts are seen as occurring through environmental interactions, restricted by biologically controlled mental capabilities at a given time.

Kohlberg's theory argues that children's discovery that they are male or female causes them to identify with members of their own gender, not the other way round, as SLT and psychoanalytic theories suggest. Kohlberg sees children acquiring an understanding of the concepts 'male' and 'female' in three stages, where they understand increasingly more sophisticated gender concepts, with a new stage appearing only after thinking has matured to a certain point. Consequently, children understand gender differently at different ages, with gender concepts developing as children actively structure their social experiences. It is not, therefore, a passive social learning process occurring through observation and imitation.

According to the theory, it is only after gender constancy is reached, at about the age of seven, that children start to develop gender concepts to suit their own gender. Table 10.1 on page 441 outlines the stages of gender identity.

Table 10.1 Stages in the development of gender identity

Stage 1: Gender labelling (basic gender identity) Occurs between 18 months and 3 years, and refers to children's recognition of being male or female. Kohlberg sees an individual understanding their gender as a realisation that allows them to understand and categorise their world. This knowledge is fragile, with 'man', 'woman', 'boy' and 'girl' little more than labels, equivalent to personal names. Children sometimes choose incorrect labels and do not realise that boys become men and girls become women.
Stage 2: Gender stability By the age of 3 to 5 years, most children recognise that people retain gender for life, but rely on superficial, physical signs to determine gender. If someone is superficially transformed – for example, a woman having long hair cut short – children infer that the person has changed gender.
Stage 3: Gender constancy (consistency) By about age 6–7 years, children realise that gender is permanent, e.g. even if a woman has her head shaved, her gender remains female. Gender constancy represents a kind of conservation, an understanding that things remain the same despite changing appearance. Gender understanding is complete only when children appreciate that gender is constant over time and situations.

Figure 10.12 A child with gender constancy understands that a woman with a shaved head is still female

This theory states that once children acquire gender constancy, they value the behaviours and attitudes associated with their gender, and then identify with adult figures possessing the qualities seen as relevant to their concept of themselves as male or female. This entails imitating same-sex models and following sex-appropriate activities. Maccoby & Jacklin (1974) called this 'self-socialisation' because it does not depend directly on external reinforcement.

Research

Slaby & Frey (1975) gave questions to 2–5-year-old children to assess their level of gender constancy and then several weeks later showed them a film of a man and woman performing gender-stereotypical activities. Children with high levels of gender constancy paid more attention to same-sex models than children with low levels of gender constancy, which suggests that high gender constancy children watch their own gender to acquire information about gender-appropriate behaviour, supporting Kohlberg's theory that gender development is an active process. The results also support Kohlberg's claim that gender constancy is a cause, rather than an effect, of the imitation of same-sex models.

Rabban (1950) found, by asking questions about gender, that children's thinking changes as they age. By three years most children demonstrated gender identity, but did not have an understanding of what gender they would grow into. By five years of age, 97 per cent demonstrated **gender stability**, supporting the stages of Kohlberg's theory.

Thompson (1975) found that by two years, children given pictures of boys and girls could select same-sex ones, demonstrating that children could self-label and identify the gender of others. By three years, 90 per cent showed gender identity, compared with only 76 per cent of two year olds, showing the developmental nature of the concept in line with Kohlberg's theory.

McConaghy (1979) found that if a doll was dressed in transparent clothing so its genitals were visible, children of 3–5 years judged its gender by its clothes, not its genitals, supporting Kohlberg's belief that children of this age use superficial physical indicators to determine gender.

Frey & Ruble (1992) informed children that certain toys were either 'boy' or 'girl' toys. Boys who had achieved gender constancy chose 'boy' toys, even when they were uninteresting. Girls of the same stage exhibited similar tendencies to a lesser degree, giving some support to Kohlberg's theory.

Evaluation

Research suggests that the concepts of gender identity, stability and constancy occur in that order across many cultures, supporting Kohlberg's theory and suggesting a biological mechanism.

A problem for Kohlberg's theory is that it predicts little or no gender-specific behaviour before children acquire gender constancy. But even in infancy, boys and girls may sometimes show preferences for stereotypical male and female toys. Children generally demonstrate gender-appropriate behaviours and reward gender-appropriate behaviours in peers before they have reached gender constancy, casting doubt on Kohlberg's idea of universal stages of development.

Kohlberg underestimated the age at which gender cognition occurs. Bem (1981) believes that children have an awareness of gender and gender-specific behaviours from around two years, due to the development of gender schemas.

The theory concentrates on cognitive factors and overlooks important cultural and social factors, such as the influence of parents and friends.

Kohlberg's theory is mainly descriptive – it outlines the process of gender development but does not really explain how developments occur and as such lacks depth of explanation.

Kohlberg's theory of gender development is more of a holistic than a reductionist theory, as it combines social learning and biological developmental factors.

YOU ARE THE RESEARCHER

Design an experiment to assess whether children of different ages have gender constancy.

Information from psychological theories should give you some indication of what age groups to use.

How would you assess whether gender constancy had been attained? What would be the IV and the DV? What steps would you take to ensure that the study is ethical?

Gender schema theory

Martin & Halverson (1981), Bem (1981)

Gender schema theory sees gender identity alone as providing children with the motivation to assume sex-typed behaviour patterns. The difference between this approach and Kohlberg's is that for initial understanding of gender to develop, children need not understand that gender is permanent. Like SLT, this approach sees children learning 'appropriate' patterns of behaviour by observation. But, similarly to Kohlberg, children's active cognitive processing of information also contributes to sex typing.

KEY TERM

Gender schema theory – an explanation of gender development that sees gender identity alone as providing children with motivation to assume sex-typed behaviour patterns

Gender schema, an organised grouping of related concepts, begins to develop at 2–3 years, and once children have gender identity, they accumulate knowledge about the sexes, organising this into gender schemas. Such schemas provide a basis for interpreting the environment and selecting appropriate forms of behaviour, and thus children's self-perceptions become sex-typed. In-group schemas are formed concerning attitudes and expectations about one's own gender, and out-group schemas about the other gender. According to this theory, toys, games and even objects become categorised as 'for boys' or 'for girls' (see Figure 10.13).

Maccoby (1998) believes that because gender can be understood as an either/or category, children understand very early that this is a key distinction and it serves as a 'magnet' for new information. Alternatively, adults and other children emphasise gender differences in countless small ways. Whatever the origin of early schema, once established many experiences are assimilated (fitted into existing schemas) and children show preference for same-sex playmates and for gender-stereotyped activities, actively ignoring the other gender. However, gender schemas undergo developmental change as children's general cognitive abilities develop.

Figure 10.13 Historically, society has often associated particular toys with particular genders, such as dolls being categorised as toys 'for girls' and trucks as toys 'for boys'

Developmental changes in children's gender schema

- According to the theory, preschoolers learn distinctions about what kinds of activities and behaviour go with each gender by observing other children and through reinforcements received from parents – for example, stereotypes like 'men have short hair' and 'girls play with dolls'. They also learn gender 'scripts', sequences of events that go with each gender, such as stereotypes like 'cooking dinner' (female) and 'building with tools' (male).
- From the age of 4–6 years, children learn subtle and complex sets of associations for their own gender: what children of the same gender like and do not like, how they play, how they talk, what kinds of people they spend time with. Not until age 8–10 do children develop schemas of the opposite gender matching the complexity of the same-gender schema.
- When gender constancy develops at 5–6 years, children's understanding of 'what people like me do' becomes more elaborated. This 'rule' is treated as absolute.
- By late childhood and early adolescence, it is understood that 'rules' are just social conventions and gender-role schemas become more flexible. Teenagers abandon the automatic assumption that what their own gender does is preferable, and some teenagers define themselves as androgynous.

Research

Masters *et al.* (1979) found that children aged between four and five years selected toys by their gender label (boy toy/girl toy) rather than which gender was seen playing with the toy, illustrating the application of gender schemas.

Martin & Halverson (1983) asked children to recall pictures of people, finding that children under the age of six recalled more gender-consistent ones – for example, a male footballer – than gender non-consistent ones – for example, a male nurse – in line with gender schema theory predictions.

Martin & Little (1990) found that preschool children have gender stereotypes about what is appropriate for boys and girls before they develop much understanding about gender, supporting the idea of the formation of gender schemas.

Campbell (2000) found that even the youngest infants between 3 and 18 months had a preference for watching same-sex babies and by 9 months boys showed an increasing tendency to pay attention to 'boy toys'. This shows that young children pay more attention to their same-sex group, supporting the idea of gender schemas forming early on.

Poulin-Dubois *et al.* (2002) found girls as young as two years could choose a doll to carry out stereotypical male or female jobs, demonstrating a schema for gender-appropriate tasks. By 2.5 years, boys showed the behaviour too, suggesting that young children learn from models on the basis of their own sex.

Aubry *et al.* (1999) performed a longitudinal study into preferences for gender-related items. Once a belief had taken hold that an item was for the opposite sex, a reduced preference for that item developed, illustrating how gender schemas affect behaviour.

Evaluation

- The theory explains why children's attitudes and behaviour concerning gender are rigid and lasting. Children focus only on things that confirm and strengthen their schemas, ignoring behavioural examples that contradict the theory.
- Gender schema theory explains why children are more likely to model gender-appropriate behaviour rather than imitating a same-sex model demonstrating non-gender-appropriate behaviour.
- There is much research evidence supporting gender schema theory, but some studies show that children act in a gender-typical way before they develop gender schemas. Eisenberg *et al.* (1982) found that children aged 3–4 justified their gender-specific choice of toys without reference to gender stereotypes. Schaffer (1996) argues the influence could be in the opposite direction, children's monitoring of their own and others' behaviour leading to the development of gender schemas.
- The theory predicts that as gender schemas develop, children should display behaviour consistent with perception of their own gender. Some research agrees, but there is contradictory evidence, too. Campbell *et al.* (2002) found that two-year-old boys and girls who possessed high levels of gender knowledge did not display preferences to play with gender-specific toys.
- When children perform activities not normally stereotypical of their gender, like a boy cooking, they adjust their thinking so the activity becomes acceptable. This implies that thinking is affected by behaviour, while cognitive schema theory predicts the opposite. This weakens the theory somewhat.
- Gender schema theory is reductionist, as although it offers a plausible compromise between social learning and cognitive developmental theories, the theory neglects the influence of biological factors, assuming that all gender-orientated behaviour is created through cognitive means.

STRENGTHEN YOUR LEARNING

1. What is the main difference between Kohlberg's theory of gender constancy and gender schema theory?
2. Explain what is meant by i] gender labelling, ii] gender stability, iii] gender constancy.
3. What are gender schemas and what do they allow children to do?
4. Outline developmental changes in gender schemas.
5. Summarise what research evidence suggests about gender schemas.
6. What other evaluative points can be made concerning gender schemas?

'The great question that has never been answered, and which I have not yet been able to answer, despite my thirty years of research into the feminine soul, is "What does a woman want?"'

Sigmund Freud (1925)

10.4 Psychodynamic explanation for gender development

The **psychodynamic explanation of gender development** centres on the work of Sigmund Freud (1856–1939). Freud saw conscious behaviour as motivated by unconscious drives, with the structure of the mind consisting of the id, ego and super-ego, the three components of personality. The ego, which is based in reality, has to balance the unreal opposing demands of the id, which is constantly seeking selfish pleasure, and the super-ego, which constantly seeks to be morally perfect. Conflicts between these structures of mind occur in each of five stages of psychosexual development – the oral, the anal, the phallic, the latent and the genital – after which the adult personality is formed. The key stage in relation to gender development is that of the phallic stage.

Figure 10.14 Freud developed the psychoanalytic theory of gender development

Freud's psychoanalytic theory of gender

Freud saw children as experiencing an unconscious conflict as they passed through each stage of psychosexual development (see page 223). In the first two stages, the oral and anal stages, a child is perceived as bisexual, as gender identity is not seen as existing and there is no visible difference between the behaviour of boys and girls. However, when a child enters the phallic stage between three and five years of age its libido (life force) is seen as increasingly focused upon its genitals and it is in this stage that a child's gender identity develops through the resolution of either the **Oedipus complex** (for boys) or the **Electra complex** (for girls).

'If this gun was real I could shoot you and sleep in the big bed with mummy.'

The Happy Flowers (Homestead Records) (1990)

Oedipus complex

Oedipus was a mythical Greek king who accidentally killed his father and married his mother. Freud used the term to describe how a boy's first sexual

KEY TERMS

Psychodynamic explanation for gender development – theory of gender development based on Freud's psychoanalytic theory

Freud's psychoanalytic theory of gender – an explanation of gender development that sees gender identity and role as acquired during the phallic stage where the focus of libido moves to the genitals

Oedipus complex – the arousal in boys of unconscious sexual desire for their mother and fear and dislike of their father

Electra complex – the arousal in girls of unconscious sexual desire for their father and dislike of their mother

desires are directed at the opposite-sex parent: his mother. This occurs during the phallic stage of psychosexual development (3–5 years of age), so called as the libido's sexual energy is directed into the phallus (penis). The feeling of attraction for his mother is accompanied by loathing of his father, whom he sees as having access to his mother, the object of his desires. The son also fears his father, as he believes if his father realises the son's desire for his mother, he will remove the boy's penis, a fear known as castration anxiety.

Male identification and internalisation

KEY TERMS

Identification – the process of acquiring the characteristics of the same-sex parent

Internalisation – the incorporation of the same-sex parent into an individual's personality

To resolve the conflict between his desire for his mother and his fear of his father a boy gives up his desire for his mother and identifies with his father, a process known as **identification** with the aggressor. Identification with his father allows a boy to incorporate his father into his own personality, permitting him to **internalise** his male gender. Thus, by resolving his Oedipus complex, a boy begins to have a sense of male identity. If a boy was not to satisfactorily resolve his Oedipus complex, Freud believed he would be confused about his sexual identity.

'To her the name of her father was another word for Love.'

Fanny Fern (1853)

Electra complex

In Greek mythology Electra was a daughter of King Agamemnon who, with her brother Orestes, plotted against and killed their mother Clytemnestra, to avenge their father's murder. The term (actually coined by Carl Jung in 1913) is used to describe how a girl's first sexual desires are directed at the opposite-sex parent, her father, which, as with the Oedipus complex, occurs during the phallic stage of psychosexual development. In this stage a girl, according to Freud, believes she does not have a penis, as she has been castrated. As her mother also does not have a penis, she gets the blame for the daughter not having a penis. The girl desires a penis, as it is a symbol of male power, a concept known as penis envy. Therefore she desires her father as he has what she wants. Unable to have a penis of her own, penis envy is converted into a desire for a baby, a concept known as the penis-baby making project.

Female identification and internalisation

A daughter believes herself to be in competition for possession of her father, a feeling she represses for fear of losing the love of her mother. This conflict is resolved by identification with her mother, allowing a girl to incorporate her mother into her own personality and permitting her to internalise her female gender. Thus, by resolving her Electra complex, a girl begins to have a sense of female identity. Because a girl thinks she has already been castrated, Freud saw girls as not as fearful as boys are (who have more to lose) and thus believed female identification was not as strong as male identification. Freud believed that if a girl did not resolve her Electra complex she would be confused about her sexual identity.

Freud saw girls as only passively identifying with their mothers, while boys more strongly actively identify with their fathers, thus boys are seen as casting off the passivity of their earlier bisexual stage to become active

and dominant males, while females take on the passivity of the earlier bisexual stage to become timid and submissive. Indeed, Freud saw women as sexually inferior to men, with male development being the norm and female development being a deviant form of development.

Research

Freud (1909) performed a case study of 'Little Hans', a five-year-old boy with a phobia of horses, especially ones with black bits around their mouths, which Freud interpreted as horses being representative of the boy's father (the black bits being his moustache). Therefore Hans was actually scared of his father, not horses, which was seen to fit the concept of the Oedipus complex, whereby Hans was fearful of his father castrating him for Hans desiring his mother. Hans was also seen to have overcome his Oedipus complex by having two fantasies, one where a plumber came and exchanged his bottom and 'widdler' (penis) for larger ones, and a second one where he fathered several children. This fitted Freud's theory of Hans identifying with his father and internalising his male gender.

Hyman (1921) reported that 22 of 31 female manic-depressive patients were diagnosed as suffering with an unresolved Electra complex, with 12 of the 22 having regressed to an earlier stage of psychosexual development, providing some support for Freud's theory.

Malinowski (1922) reported that boys in the Trobriand Islands exhibited the signs of hostility Freud described in his Oedipus complex, however not at their fathers but instead at their maternal uncles, who in Trobriand Islands culture are given the role of family disciplinarian. This opposes Freud's theory as it suggests that boys' hostile relationships with their fathers may be a reaction to the discipline fathers exert rather than being sexual jealousy over their mothers.

Friedman (1952) found that when a story began with a child doing something nice with their opposite-sex parent and then being joined by the same-sex parent, children produced a sadder end to the story than when a story began with a child doing something nice with their same-sex parent and then being joined by the opposite-sex parent. This supports the idea within both the Oedipus and Electra complexes of children having more attraction to opposite-sex parents and more hostility towards same-sex parents.

Snortum *et al.* (1969) reported that 46 males exempted from military service for being homosexual had more close-bonding and controlling mothers and rejecting, detached fathers than a comparable sample of heterosexual men. Some argued that this lent support to Freud's theory that males who fail to resolve their Oedipus complex by identifying with their fathers could become homosexual.

Wiszewska *et al.* (2007) asked female participants to rate the attractiveness of pictures of different kinds of men and to assess the quality of their relationships with their fathers. The researchers also compared the similarity of the images females found attractive to those of their fathers, finding that women who had been well treated by and had close relationships with their fathers as children were attracted to men who resembled their fathers physically. This supports Freud's idea of the Electra complex, where girls' desires become centred on their fathers.

RESEARCH IN FOCUS

The scientific process uses empirical methods, involving the formation and rigorous testing of hypotheses under controlled conditions and without bias or expectation by the researcher. Research should also be replicable to check the validity of results, with hypotheses capable of being seen to be false.

Explain why Freud's psychoanalytic theory of gender is widely criticised for not fitting the scientific process.

Evaluation

Freud's case study of 'Little Hans' can be criticised for being subjectively interpreted to fit the idea of the Oedipus complex. The boy's father (who supplied Freud with the details of the study) was an avid supporter of Freud and thus biased. Even if Hans did have an Oedipus complex it does not prove, as Freud believed, that this is universal to all individuals.

There is little scientific support for the theory and where research support does exist, there is generally a majority of studies that do not add support. For instance, Snortum *et al.*'s (1969) findings of homosexual men having unresolved Oedipal complexes is refuted by countless studies that show the incidence of homosexuality in individuals raised only by a same-sex parent is no different to those raised with an opposite-sex parent.

Evidence that supports Freud can also be interpreted in ways that do not. For example, Wiszewska *et al.*'s (2007) findings of well-treated females being attracted to males resembling their fathers can equally be interpreted as such fathers creating a learned template for good male partners.

Freud's theory of gender development is mainly male-orientated, which is probably a product of the time period in which it was constructed. The theory sees females as inferior to males, reflecting the standing in which females were held at the time. The concept of the Oedipus complex was created first, with the addition of the Electra complex coming later, almost as an after-thought. Freud was unhappy with it himself, claiming women to be 'a great mystery'.

Although Freud's theory is of historical importance and stimulated research and interest in gender development, most contemporary psychologists do not consider his ideas to have serious merit.

Freud's ideas are difficult to assess scientifically – concepts such as the libido, Oedipus and Electra complexes are impossible to measure and thus cannot be tested in any real empirical way.

STRENGTHEN YOUR LEARNING

1. Explain how a] a boy goes through and overcomes his Oedipus complex, b] a girl goes through and overcomes her Electra complex.
2. Summarise what research evidence suggests about Freud's psychoanalytic theory of gender development.
3. What other evaluative points can be made concerning Freud's theory?

ASSESSMENT CHECK

1 Select which of the four following presentations, A, B, C or D, correctly puts Kohlberg's stages of gender constancy in the order in which they occur: **[1 mark]**

A Gender labelling/Gender constancy/Gender stability

B Gender stability/Gender labelling/Gender constancy

C Gender constancy/Gender stability/Gender labelling

D Gender labelling/Gender stability/Gender constancy

2 Elaine is five years old and has a close relationship with her father of whom she is very fond. However, Elaine often has arguments with her mother and refuses to play with her or do as she is told. There are no such problems with her father whom she likes to play with and obeys immediately.

a) Refer to the scenario above to explain why Elaine may have developed an Electra complex. **[3 marks]**

b) Outline how Elaine might resolve her Electra complex. **[2 marks]**

3 A researcher got some children who had been assessed as being either of 'low gender constancy' or 'high gender constancy' to watch a film where on one side of a room a man was sawing a plank while on the other side a woman was washing some dishes. The amount of time children spent watching the man and the woman was recorded.

The following table shows scores for mean percentage time spent watching the man rather than the woman.

Sex of participant	Low gender constancy	High gender constancy
Boys	48%	70%
Girls	58%	40%

a) State an appropriate graph to display the data and give one reason for selecting this type of graph. **[1 + 1 marks]**

b) Sketch the graph, making sure it is titled and the axes are correctly labelled. **[3 marks]**

4 In terms of the psychoanalytic explanation of gender development, explain what is meant by i] identification, ii] internalisation. **[1 + 1 marks]**

5 Outline and evaluate gender schema theory. **[16 marks]**

'Children are great imitators. So give them something great to imitate.'
Anonymous

10.5 Social learning theory as applied to gender development

KEY TERMS

Social learning theory – explanation that sees gender development as occurring through the observation and imitation of models

Influence of parents – the role that mothers and fathers play in forming and maintaining gender roles

Influence of peers – the role that other children play in forming and maintaining gender roles

Influence of media – the effect of mass communication upon gender development

Influence of culture – the effect of society upon gender development

Social learning theory (SLT) perceives gender roles being learned through observation and imitation of socialising agents, such as **parents** and **peers**, and the **influence of media** and **culture**. Socialising agents model examples of appropriate and inappropriate gender behaviour and the consequences of conforming or not conforming to gender norms. Children observe models being reinforced or punished for gender-appropriate or gender-inappropriate behaviours and so they imitate behaviours they see being reinforced and do not imitate those they see being punished. Through such observational learning, children acquire knowledge regarding gender roles without actually 'doing' anything themselves.

'We've begun to raise daughters more like sons... but few have the courage to raise our sons more like our daughters.'
Gloria Steinem (1992)

Figure 10.15 Fathers reinforce sex-typed behaviours more than mothers

The influence of parents

SLT sees girls and boys learning dissimilar gender roles, as parents react to them differently. When children imitate gender-appropriate behaviour they are reinforced with praise and affection. Parents also give boys and girls different toys, speak to and handle them differently and even decorate their bedrooms differently. Fathers seem to reinforce sex-typed behaviours more than mothers, especially in sons. SLT also perceives same-sex models as more influential in being more likely to be imitated. Children, by a gradual process of immersion, take on parents' gender schemas.

Research

Block (1979) found that boys are positively reinforced more for imitating behaviours reflecting independence, self-reliance and emotional control, while girls are reinforced for dependence, nurturance, empathy and emotional expression. This suggests that SLT can explain why males and females acquire different gender roles.

Huston (1983) found that parents believe they respond equally to aggressive acts by sons and daughters, but actually respond more frequently and quickly to girls being aggressive, demonstrating how parents treat children in gender-biased ways.

Quiery (1998) found that fathers interact in a more goal-seeking and achievement-orientated way and give more attention to sons, while mothers attend equally to sons and daughters. This supports the idea that fathers reinforce sex typing more than mothers do.

Fagot & Leinbach (1995) found that four year olds displayed more gender-role stereotyping and used gender labels earlier in 'traditional' families where the dad worked and mum cared for children at home than in 'alternative' families where parents shared childcare. This suggests that parents do act as gender role models for their children.

Wood *et al.* (2002) performed a meta-analysis that found parents tend to class more toys as gender-neutral than non-parents of a similar age. This suggests that parents become aware of the limitations that gender stereotyping places upon children's creative explorations and thus come to hold less rigid views.

Friedman *et al.* (2007) found that middle-class mothers who held gender-neutral attitudes often made descriptive stereotypes (descriptions of general 'truths' about each gender), such as 'girls like dolls'. This implies that there are subtle ways in which parents influence gender-stereotyped behaviour.

Rafferty (2013) found that compared with children raised by heterosexual parents, homosexual parents were less likely to endorse gender stereotyping, which suggests that different parenting styles exert different influences upon children's perceptions of gender. This was supported by the additional finding that when homosexual parents adopted more 'traditional' roles, with one as the main wage earner and one as the primary caregiver, children were more likely to express more gender-stereotyped views.

'So if your mate said jump off a cliff, you'd do that too, would you?'

Gwlenis Maureen Lawton (1964)

The influence of peers

Peers (individuals of equal status) act as role models for gender-role stereotypes, with children more likely to imitate same-sex models. Gender differences develop in social situations like peer settings, more than in individual settings, with children soon displaying preferences for same-gender playmates and dividing themselves into mainly same-gender groups, where they resist attempts to interact with the opposite gender. Peers reinforce gender stereotypes, for instance by praising gender-appropriate behaviour and ridiculing non-appropriate behaviour, and are intolerant of cross-gender behaviour, for example boys playing with girls.

The observational learning that occurs through interaction with peers, especially after a child's gender identity and gender-role stereotypes have developed, is a more powerful influence on gender development than interactions with and reinforcements from parents and older others.

However, once children have internalised, through social learning, which behaviours are appropriate for males and females, their own behaviour becomes no longer dependent on external rewards and punishments. Instead, children self-direct their behaviour to satisfy their internalised standards, feeling pride on achieving gender role-consistent behaviour even without external praise, such as from their peers.

Research

Langlois & Downs (1980) found that peers were less tolerant than mothers of preschoolers playing with opposite-gender toys, supporting the idea of peers being a stronger influence on gender development than parents.

Archer & Lloyd (1982) reported that three year olds playing the opposite sex's games were ridiculed by their peers and shunned, supporting the idea that peers police gender roles.

Lamb & Roopnarine (1979) found peers reward sex-appropriate play in preschool children and ridicule sex-inappropriate play, demonstrating the strong influence that peers have in reinforcing gender behaviour.

Maccoby (1990) reported that children quickly associate with playmates of the same sex, congregating and dividing themselves into same-gender groups and resisting attempts to interact with opposite-gender children. This supports the idea that gender differences emerge as a result of interaction in peer settings.

Bussey & Bandura (1992) found that children aged three years disapproved of gender role-inconsistent behaviour by their peers, such as girls playing football, but rated their own feelings about masculine and feminine toys equally. However, four-year-old children disapproved of gender role-inconsistent behaviour in their peers while also being self-critical in their feelings about playing with gender role-inconsistent toys. This supports the idea that while social sanctions for gender-typed behaviour are evident in young children, self-regulation becomes more important with age.

Francis (2000) found that in school, boys were pressurised to be active, aggressive, competitive and heterosexually inclined. Girls were often referred to in sexual ways and interest in academic pursuits attracted ridicule. Girls, however, constructed themselves as opposite to boys in being sensible and selfless, thus indicating the continued strong influence of peers upon gender, which seems to have more negative consequences for boys' school performance.

Renold (2001) found that final-year primary school girls who sought academic success were bullied and ostracised by both boys and girls and that such girls had problems establishing a feminine role that did not revolve around boys and presenting their body in certain ways. This illustrates how peers play a strong role in policing stereotypical gender roles.

Evaluation

- SLT cannot explain gender changes with age; indeed, it assumes there are no developmental stages, which evidence suggests do exist.
- SLT cannot explain gender differences between same-sex siblings. Two brothers may be raised by the same parents in the same way, but one turns out to be more stereotypically 'masculine' than the other, which could suggest a biological influence on gender development.
- SLT cannot explain how new gender behaviours arise, for instance the emergence of more child-caring types of men. SLT only explains the observation and imitation of existing gender behaviours. For example, the influence of peers seems often to just be that of reinforcing existing gender-role stereotypes.
- SLT cannot explain why children's willingness to imitate behaviour depends more on whether the behaviour is seen as gender appropriate than the sex of the model demonstrating the behaviour. This suggests cognitive factors are at play, as children seem to be actively selecting which behaviours to imitate.
- Studies of SLT lack gender bias, as such research focuses on the effects of peer influences upon both girls and boys.
- Peers may have a stronger role than adults in shaping gender development, as children interact more with peers in social situations and tend to police gender behaviours more, such as not accepting children who display non-gender-stereotypical behaviour. Parents tend to exert more influence when children are younger, but peers become more important as children age and increasingly interact with each other.

'I don't want to be a supermodel; I want to be a role model.'

Queen Latifah (1993)

The influence of media on gender roles

Media forms, such as television, magazines, social media and pop music, influence the acquisition, shaping and maintenance of gender roles. Males are more represented in most TV programmes, including children's programmes. Males are also portrayed in a wider range of and higher-status roles than females.

Both sexes are portrayed in gender-stereotypical ways and even within shared formats gender roles are apparent, for instance in the composition of pop groups, with females as singers and males as musicians (see Figure 10.16).

Media influences provide children with a constant source of information as to which gender behaviours to imitate. Children who 'consume' the most media, for example those who watch a lot of television, develop stronger and more extreme perceptions of gender roles. More recent media influences, such as social network sites like Facebook, suggest they are more female dominated, but still reinforce traditional gender roles. Nevertheless, there is some contradictory evidence that social network sites can help break down traditional gender stereotypes.

Figure 10.16 The group Blondie conformed to the gender-stereotypical format of having a female singer and male musicians

CONTEMPORARY RESEARCH

Gender stereotypes of scientist characters in television programmes popular among middle school-aged children – Jocelyn Steinke *et al.* (2008)

Figure 10.17 Does TV portray females as scientists?

As more opportunities now exist for females to become scientists, the researchers were interested in seeing whether there was a gender difference in the way in which scientists were portrayed in children's TV programmes (see Figure 10.17).

Aim

To examine gender stereotyping in portrayals of scientist characters in television programmes popular with middle school-aged children.

Procedure

Fourteen popular television programmes watched by 12–17 year olds with a scientific element to them were selected.

Eight episodes of each programme broadcast between April and May 2006 were randomly selected for analysis – in all, 112 episodes.

Criteria for identifying scientist characters were constructed – for example, conducting experiments – and inter-rater reliability was established by using two raters.

196 scientist characters were identified and the following characteristics listed: sex, race, age group, scientific status, marital status and parental status.

Each character's behaviour was coded for gender-stereotypical and non-gender-stereotypical behaviour.

Findings

Of 196 scientist characters, 113 (58 per cent) were male, 83 (42 per cent) were female.

Male scientists were no more likely than females to be portrayed as high status.

Of 42 married scientist characters, slightly more were male.

Of 13 scientist characters with children, slightly more were male.

Female scientist characters were not more likely than males to be portrayed with feminine qualities of dependence and being caring and romantic.

Male scientist characters were more likely than females to be portrayed with masculine qualities of independence and dominance, but not athleticism.

Conclusions

Popular children's TV programmes portray more male than female scientist characters.

Male scientist characters are more likely to be portrayed with stereotypically masculine characteristics.

Evaluation

- Progress has been made in presenting scientific characters in children's TV programmes in a non-biased way. Earlier studies, like Steinke & Long (1996), found females more likely to be portrayed as assistants.
- Most programmes featuring female scientist characters were educational ones funded by the National Science Foundation, implying that mainstream media providers are more to blame for gender-stereotyping portrayals.

RESEARCH IN FOCUS

In Steinke *et al.*'s (2008) study, criteria for identifying scientist characters were constructed and inter-rater reliability was established by using two raters. Explain in the context of this study the purpose of establishing behavioural criteria.

What is inter-rater reliability and how would it be established using two raters?

Research

Huston & Wright (1998) found that in US TV programmes males almost always outnumber females, especially in children's programmes, with men shown in dominant roles and higher occupational status and women in a narrow range of inferior roles and less able to deal with problems, illustrating the differences in gender-role presentations.

Bee (2000) found that books, including picture books and early reading books, are gender stereotyped and that boys' TV commercials are fast, sharp and loud compared with those for girls, which are slower, gentle and quiet, suggesting that media gender-role portrayals and influences differ for boys and girls from an early age.

Gunter (1986) found that children categorised as 'heavy' viewers of television hold stronger stereotyped beliefs than 'lighter' viewers, a fact Huston (1990) did not find surprising, as by age 18 the average American child has spent more time in front of the TV than in a classroom, demonstrating the potential strength of media influences on gender development.

Kivran-Swaine *et al.* (2013) examined the relationship between language and gender on social media by analysing 78,000 Twitter messages, to find strong evidence of gender-driven language. Females used more emotive language and had higher usage of emoticons, especially in communications with other females, illustrating how gender influences styles of communication on social media, which are very much in line with traditional patterns of gender roles.

Pew Research Internet Project (2011) found that unlike most social media sites, LinkedIn, with more than 100 million users, was male dominated, men making up 63 per cent of users compared with 37 per cent of users being female. This may be because the site caters for more male-dominated professional occupations. However, females on LinkedIn had created 70 per cent of the connections, which suggests females in traditionally male-dominated industries have become more involved than their male counterparts, with females being seen as more knowledgeable. This illustrates how social media can help to break down typical gender stereotypes.

Martinez-Aleman & Wartman (2009) found that although female dominated, stereotypical gender roles tend to be portrayed on the social media site Facebook, with men conforming to traditional views of masculinity and females to traditional views of femininity. This supports the idea that although a modern phenomenon, social networking sites still reinforce traditional gender roles.

Evaluation

The fact that 'heavy' TV watchers hold stronger gender-stereotyped beliefs is merely correlational evidence, not necessarily indicating TV to be the cause of such attitudes. It may simply be that gender-stereotypical children watch lots of TV because it confirms their gender stereotypes.

It is simplistic to see children as passive recipients of media messages of gender stereotypes. Children actively select particular characters and events to respond to, which suggests more of a cognitive input than a purely social learning effect.

If media influences do have a negative influence in establishing and reinforcing traditional gender stereotypes, equally they should be able to create and promote positive non-gender-role stereotypes, like female scientists and sports stars. Johnston & Ettema (1982) showed 12 year olds a television programme designed to counter gender stereotypes, and both sexes showed reduced gender stereotyping.

Media influences on gender development may be exaggerated, as much gender development occurs before four years of age when media influences are weak. Later on, media influences probably reinforce existing gender beliefs rather than create them.

PSYCHOLOGY IN THE REAL WORLD

SLT shows how the media creates and maintains negative gender stereotypes, but equally SLT should be able to promote positive gender stereotypes through creating opportunities for observation and imitation of positive role models. For example, Steinke *et al.*'s (2008) study highlights the improvement in how female scientists are presented in children's TV shows, such as 'Nina and the Neurons' (see Figure 10.18).

However, the majority of positive gender stereotyping occurs in educational programmes and it will only be when mainstream TV programming follows suit that real progress in breaking down negative gender stereotyping will be seen to occur. This is highly desirable, for as Steinke argues, if the huge potential for science is to be tapped into, with its positive benefits for society, then greater participation by women is essential.

Figure 10.18 TV shows like 'Nina and the Neurons' promote positive gender stereotypes of females that ultimately benefits all of society

'As the traveller is wiser than he who has never left his own doorstep, so a knowledge of other cultures sharpens our ability to scrutinize more steadily, to appreciate more lovingly, our own.'

Margaret Mead (1949)

The influence of culture on gender roles

Studying cultural influences on gender roles allows psychologists to assess the extent to which gender is a biological or a social construct. If gender was biological in nature then the different cultural influences that people are subjected to around the world would have no influence on gender development – it would be the same in all cultures. If, however, different cultural influences result in differences in gender roles between cultures this would infer gender to be socially constructed.

Research

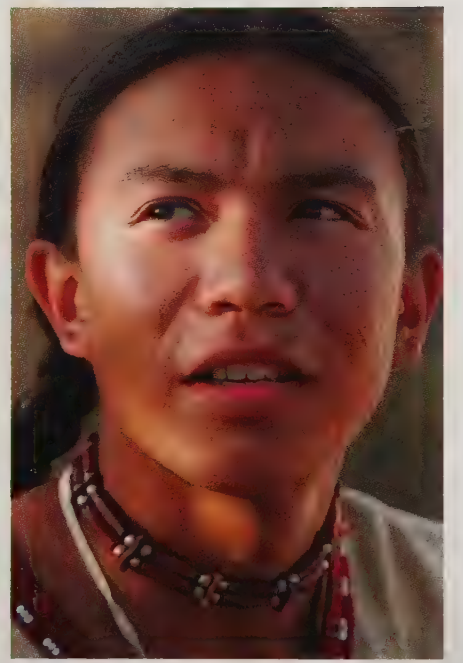


Figure 10.19 A Native American teenage boy

Mead (1935) conducted research into gender differences between tribes in Papua New Guinea. In the Arapesh, both males and females exhibited feminine, caring behaviours. In the Tchambuli, the men exhibited what would be seen in Western culture as female behaviours, while women exhibited traditional (Western) male behaviours. In the Mundugumor, both men and women exhibited masculine aggressive personalities. This indicates gender roles to be socially constructed rather than biological in nature.

Barry *et al.* (1957) found that in non-Western cultures nurturing was seen as a dominantly feminine characteristic, while self-reliance was regarded similarly for males. As these findings reflect those of Western cultures, it therefore suggests a biological basis to gender roles. Further support came from Whiting & Edwards (1988) finding that it was fairly universal cross-culturally for girls to be encouraged into domestic and child-caring roles, while boys are socialised into tasks involving responsibility, like looking after animals.

La Fromboise *et al.* (1990) conducted observations and interviews to find that gender roles among various North American tribes were different from those in Western cultures. For example, women were often warriors, which illustrates that aggressive roles are not universally male, indicating gender to be more of a social construction.

Williams & Best (1990) found that there was universal agreement across cultures about which characteristics were masculine and feminine, with men perceived as dominant and independent, and women as caring and sociable, with children from these cultures also exhibiting the same attitudes. This implies attitudes to gender roles to be universal and therefore biological in nature.

Evaluation

- Conducting cross-cultural research is prone to the problem of an imposed etic, where researchers use research methods and tools relevant and applicable in their own culture but alien and non-applicable to other cultures, which can result in flawed conclusions being drawn. Many replications of Western cultural studies in other cultures have involved an imposed etic.
- As gender stereotypes and gender roles are fairly consistent across human populations, it initially seems that gender is more biological.

However, there is also evidence of gender roles varying considerably across cultures, indicating some influence of social learning.

Globalisation may be contributing to the lessening of cultural differences, and there has been a global reduction in the differences between masculine and feminine gender roles, implying that social influences are stronger than biological ones.

Margaret Mead's initial beliefs of gender roles being cultural constructions were influential, but she later came to believe that gender roles were predominantly biological in nature. This dramatic conversion is argued by Booth (1975) to have occurred due to Mead marrying a man with very 'traditional' views on the roles of men and women, and to her having her own child. This suggests that the personal viewpoints investigators bring to their research have strong effects on the conclusions they ultimately draw. This is supported by Errington & Gewert's (1989) study of the Tchambuli, which did not find the gender role reversals that Mead did.

Rather than seeing gender roles as simply a product of nature (biological influences) or nurture (environmental influences), they may be better understood from an interactionist point of view, where initial gender roles are biologically constructed and then later modified by social influences. This would explain the basic cross-cultural similarities in gender roles and gender stereotypes, but also why there is cross-cultural variety, especially in the types of activities to which gender roles are applied.

STRENGTHEN YOUR LEARNING

1. Explain how gender roles may be learned through socialising agents.
2. Explain how social learning of gender roles can occur through the influence of i] parents, ii] peers.
3. Summarise what research evidence suggests about the learning of gender roles through the influence of parents and peers.
4. What other evaluative points can be made concerning the social learning of gender roles?
5. How might media influence gender roles?
6. To what extent does research suggest media influences gender roles?
7. What other evaluative points can be made concerning the influence of media on gender roles?
8. Outline and evaluate Steinke *et al.*'s (2008) study of gender stereotypes of scientist characters in television programmes.
9. Why are psychologists interested in studying how cultural influences affect gender development?
10. Summarise what research evidence suggests about the influence of culture on gender roles.
11. What other evaluative points can be made concerning the influence of culture on gender roles?

'No one has the right to demand that your body be something other than what it is.'
Agnostic Zetetic (2013)

10.6 Atypical gender development

Atypical gender development is referred to in the classification system DSM-IV by the clinical label of **gender dysphoria**, a condition where individuals experience their gender identity – the psychological experience of being male or female – as not fitting their phenotype, the external sex characteristics of the body. For example, where a person, who biologically is male, with male genitalia, feels they are female, or a person who is biologically female, with female genitalia, feels they are male.

KEY TERM

Gender dysphoria – a condition whereby the external sexual characteristics of the body are perceived as opposite to the psychological experience of oneself as male or female

Figure 10.20 Gender dysphoria affects individuals unhappy with their biological sex

Prejudice and negative feelings of anxiety and distress are experienced, leading to depression, self-harm and sometimes even suicide. Gender dysphoria affects males more than females, and although prevalence rates are hard to calculate, as many are reluctant to admit to having the condition, it is estimated that up to 1 in 5,000 people may have the condition. Indications of the condition may occur fairly early, with children unhappy wearing clothes of their biological gender or playing gender-stereotypical games. Most gender dysphoria occurs in childhood, and for the majority of such children it does not persist after puberty. However, those for whom it does persist tend to have stronger gender dysphoric symptoms in childhood. Often, because of the distress and disgust with the bodily signs of their 'wrong' sex, gender dysphorics may assume the gender role of the desired sex, wearing gender-typical clothes and adopting gender-stereotyped behaviours. This helps them to feel better about themselves. Masculinising or feminising hormones can be taken to alter physical features, with the ultimate remedy being gender reassignment surgery. Since 2000, 865 gender reassignment surgeries have been performed by the NHS (see In the news, page 423).

Early explanations centred on psychological factors, such as maladaptive learning experiences, maladaptive cognitive processes and psychodynamic fixations occurring in childhood development. However, biological explanations, such as genetics and hormones, have become increasingly favoured and supported by research evidence.

Social explanations for gender dysphoria

KEY TERM

Social explanations for gender dysphoria – the perception that gender dysphoria is a condition learned via socialisation processes

Social explanations for gender dysphoria perceive the condition as being learned, for example by operant conditioning, where individuals are reinforced (rewarded) for exhibiting cross-gender behaviour. Many young children 'experiment' with gender role behaviour, for instance infant boys wearing frocks and jewellery, or girls being 'dad' when playing 'house'. Learning theory argues that parents of gender dysphorics may have reinforced the condition by encouraging and complimenting their children for such behaviour. Such family reactions could contribute to the conflict

between anatomical sex and acquired gender identity. This presumably occurs more with males, as gender dysphoria is associated more with boys than girls.

Social learning may also play a part, with the disorder being learned by observation and imitation of individuals modelling cross-gender behaviour (see Figure 10.21).

Figure 10.21 A small boy wearing a girl's outfit is an example of cross-gender behaviour

Biological explanations for gender dysphoria

Biological explanations for gender dysphoria are more recent than social explanations and more supported by evidence. The genetic explanation sees the condition as inherited, while the biochemical explanation sees a role for hormonal imbalances during foetal growth in the womb and in later childhood development. It may be that the two explanations combine, with hormonal imbalances being genetically influenced.

To investigate the genetic explanation, gene-profiling studies are performed to try to identify genetic material common to those exhibiting the condition. Attention has centred on gene variants of the androgen receptor, which influences the action of testosterone and is involved in the masculinisation of the brain. Other research methods have utilised twin studies to assess the heritability of the condition and post-mortem studies to search for structural brain differences in those with gender dysphoria.

A hormonal explanation centres in males upon the release during the third month of pregnancy of significant amounts of male hormones from the newly formed male testes, with an additional release between two and twelve weeks after birth. Such male hormonal surges must occur at the right time and in sufficient amounts for masculinisation of an infant to develop. It may be that if this process is not carried out successfully, through a disorder in the mother's endocrine (hormonal) system, maternal stress or an illness that interferes with hormonal levels, gender dysphoria may eventually arise. A similar process may occur in females, though with more involvement for oestrogen.

KEY TERM

Biological explanations for gender dysphoria – the perception that gender dysphoria is physiologically determined

Research

Gladue (1985) reported that there were few, if any, hormonal differences between gender-dysphoric men, heterosexual men and homosexual men, as evidence against the influence of hormones on gender dysphoria. As similar results are found with women it suggests a social explanation may be more fitting.

Rekers (1995) reported that in 70 gender-dysphoric boys there was more evidence of social than biological factors, but there was a common factor of a lack of stereotypical male role models, suggesting that social learning factors play a role in the condition.

Beijsterveldt *et al.* (2006) used self-report data supplied by mothers to assess cross-gender behaviour in 14,000 Dutch twins at ages seven and ten. At both ages the prevalence for cross-gender behaviour was greater in MZ (identical) than DZ (non-identical) twins and the use of statistical modelling techniques showed that 70 per cent of the variance in the tendency for cross-gender behaviour was due to genetic factors in both ages and for boys

and girls. Some have argued that this suggests a biological explanation. This was supported by Coolidge *et al.* (2002), who using data from a different twin sample found 62 per cent of variation was due to biological factors and 32 per cent to environmental factors.

Zucker *et al.* (2008) performed a longitudinal study on gender-dysphoric females between two and three years of age who had been referred to a clinic. Only 12 per cent were still gender dysphoric at age 18. A study on equivalent males found that 20 per cent were still gender dysphoric as adults, again supporting the idea that the majority of people exhibiting gender dysphoria do so only in the short term.

Hare *et al.* (2009) examined gene samples from male gender dysphorics and non-dysphorics. A correlation was found between gender dysphoria and variants of the androgen receptor gene, implying the gene to be involved in a failure to masculinise the brain during development in the womb, supporting a biological explanation.

Garcia-Falgueras & Swaab (2008) compared post-mortem data from 17 deceased individuals who had undergone gender reassignment surgery with 25 controls, to find that the hypothalamic uncinate nucleus brain area was similar in male-to-female gender-reassigned participants to female controls and was similar in the one female-to-male gender-reassigned participant to male controls. Again, some have argued that this supports the idea of gender dysphoria having a biological origin, with such structural differences possibly occurring due to abnormal hormonal activity during masculinisation and feminisation of the brain.[4]

Evaluation

- Conditioning experiences may explain why more children than adults are identified as gender dysphoric. Early life experiences are dominated by the family, where cross-gender behaviours are tolerated or even encouraged, but as the individual grows up, others outside the family exert an influence, making it more likely that an individual will be punished for behaving in 'inappropriate' ways.
- However, Hines (2004) argues that the strong, persistent desire to change sex, and the willingness to undergo surgery and hormone treatment despite formidable obstacles, such as prejudice, bullying and even job loss, points to a biological explanation.
- Increasingly, evidence suggests that the influence of hormones and genetics is the main cause of gender dysphoria, but there is little evidence to suggest a totally biological explanation and other interacting psychological factors are likely to be involved, too. More research is needed, especially to identify what types of psychological factors are required to elicit an influence, and the biological processes through which genetic effects may be operating.
- Bennett (2006) points out that while SLT explains the development of cross-gender behaviours, it cannot explain the strength of beliefs that individuals possess concerning being the wrong sex, or the resistance of such beliefs to therapy. This would indicate a biological explanation.

- Gender dysphoria is a sensitive area in which to conduct research and care must be taken when investigating the phenomenon to not cause psychological harm to what are often confused and vulnerable individuals.
- The fact that the vast majority of people with gender dysphoria who are given hormonal therapies to reduce the dissonance (lack of harmony) experienced of feeling they were of opposite gender to their biological sex see their treatment as successful supports the idea of a biological basis to the disorder. Green & Fleming (1990) found that treatment of individuals with gender dysphoria by hormonal therapy was 87 per cent successful in females reporting gender dysphoria and 97 per cent in males.

ON THE WEB

The Gender Trust is a support group for people affected by gender identity issues. They run a website containing information about the condition, links to other groups, a glossary of terms, etc. Find them at:

http://gendertrust.org.uk/

STRENGTHEN YOUR LEARNING

1. Describe the key features of gender dysphoria.
2. Outline how gender dysphoria may be accounted for by i] social explanations, ii] biological explanations.
3. To what extent does research evidence support social and biological explanations of gender dysphoria?
4. What other evaluative points can be made about social and biological explanations of gender dysphoria?

RESEARCH IN FOCUS

Experiments into gender often use quasi experiments where the IV is whether participants are male or female. Why then do some psychologists regard a quasi experiment as not being a true type of experiment? How does a quasi experiment differ from a natural experiment?

ASSESSMENT CHECK

1 Select which one of the statements A, B and C below relates to the social learning theory of gender development: **[1 mark]**

A Gender development occurs during the phallic stage of psychosexual development

B Gender development occurs through surges of hormones in the womb

C Gender development occurs through observation and imitation of models

2 When he was a young boy Gary liked to play at 'dressing up' and sometimes used to wear one of his sister's dresses and jewellery and he was praised for doing so by his parents. When he became older Gary often felt that even though he was biologically a male, he felt more as if he should be female and he has now been diagnosed with gender dysphoria.

Refer to the scenario above to explain why a social explanation might be the reason that Gary has gender dysphoria. **[3 marks]**

3 Research into the biological explanation of gender dysphoria often uses laboratory experiments. Discuss one strength and one weakness of conducting research by this method. **[2 + 2 marks]**

4 Outline and evaluate the influence of culture and media on gender roles. **[16 marks]**

5 Briefly describe the biological explanation of gender dysphoria. **[4 marks]**

SUMMARY

Sex and gender

- Sex relates to whether an individual is biologically male or female, while gender concerns the social and psychological characteristics of males and females.
- Sex-role stereotypes concern the types of qualities and characteristics seen as appropriate for each sex.
- Androgyny involves having both feminine and masculine characteristics, with androgynous individuals not influenced by sex-role stereotypes.
- The Bem Sex Role Inventory is a self-report method of measuring androgyny in terms of masculinity–femininity and gender roles.

The role of chromosomes and hormones

- Biological sex is determined by the sex chromosomes X and Y that contain genetic material that controls development as male or female.
- Testosterone, oestrogen and oxytocin are hormones involved in the development of sexual characteristics.
- Klinefelter's and Turner's syndrome are atypical chromosomal conditions that affect male and female gender development.

Cognitive explanations of gender development

- Kohlberg's theory of gender development perceives children as developing an understanding of gender in stages.
- Gender schema theory sees gender identity alone as providing children with motivation to assume sex-typed behaviour patterns.

Psychodynamic explanations of gender development

- Freud's psychoanalytic explanation of gender development, gender identity and role is explained as being acquired during the phallic stage.
- The Oedipus and Electra complexes concern the arousal of sexual desire for one's opposite-sex parent and dislike of one's same-sex parent.

Social learning theory as applied to gender development

- The social learning theory sees gender development as occurring through the observation and imitation of models, with both culture and media being important influences on gender roles.

Atypical gender develpoment

- Gender dysphoria concerns a perceived mismatch between one's external sexual characteristics and the psychological experience of being male or female.
- Biological explanations for gender identity dysphoria have greater research support than social explanations.

11 Schizophrenia

Introduction

Schizophrenia is an extremely debilitating disorder that costs £2 billion a year in Britain in treatment and care costs, so it is important it is understood in order for effective treatments to be constructed. Many theories, both biological and psychological, are offered as explanations, though no one theory accounts solely for the disorder.

There are biological and psychological treatments for schizophrenia. Drugs are used to suppress the effects of the disorder, while psychological therapies attempt to deal with the causes to effect a recovery.

Specific focus will be upon:

1 The classification of schizophrenia
2 Biological explanations for schizophrenia
3 Psychological explanations for schizophrenia
4 Drug therapies
5 Cognitive behavioural therapy, family therapy and token economies
6 The interactionist approach in explaining and treating schizophrenia.

Understanding the specification

- The specification requires that study of the classification of schizophrenia includes positive symptoms of the disorder, including hallucinations and delusions, negative symptoms, including speech poverty and avolition, as well as reliability and validity in diagnosis and classification of schizophrenia that includes reference to co-morbidity, culture and gender bias and symptom overlap.
- Biological explanations should include genetics and neural correlates, including the dopamine hypothesis, as these are explicitly listed.
- Psychological explanations should include family dysfunction and cognitive explanations, including dysfunctional thought processing, as again specific reference is made to them.
- When studying drug therapies, typical and atypical antipsychotics should be covered.
- Psychological treatments that require study due to the explicit reference to them in the specification are cognitive behavioural therapy and family therapy, as well as token economies as a means of managing schizophrenia.
- The specification also states a need for the diathesis-stress model to be studied as an interactionist means of explaining and treating schizophrenia.

These are the basic requirements of the specification. However, other relevant material is included to provide depth and detail to your understanding.

'Yesterday on the stair I met a man who wasn't there, he wasn't there again today, I wish, I wish he'd go away'
William Mearns

IN THE NEWS

Ψ The Psychological Enquirer

Figure 11.1 Anthony Phillips made a full recovery from a severe episode of schizophrenia

Anthony Phillips was a 40-year-old keen sportsman with an active social life and a successful long-term career in advertising. Anthony had no history of mental disturbance, so it was surprising when he experienced a severe schizophrenic episode. He had hallucinations where voices in his head claimed they were witches who had placed surveillance devices in his clothing and 'mind-melded' him to access his thoughts. This turned into a terrifying delusion that the voices had murdered his girlfriend and parents and raped a former girlfriend and planted evidence so the police would think he had done it. The voices also said that anyone he told about this would die.

So convinced was Anthony of the reality of all of this that he dared not go home, plus the voices said they were going to shoot him. Fortunately, concerned friends convinced Anthony to admit himself into psychiatric care where he was given antipsychotic drugs and within a short time he had recovered, with no need to continue taking medication. He returned to work and years later has never had a repetition of his illness.

Anthony is an example of someone who experienced one incident of schizophrenia and made a complete recovery. The fact that other individuals do not recover at all, or can establish a reasonably normal level of functioning only by continual use of medication, suggests there may be more than one type of schizophrenia. Some people with schizophrenia have a family history of the disorder, suggesting a genetic link, but Anthony's experience seems to be related to his substance abuse and the high levels of stress he had been experiencing immediately before becoming ill. This indicates there may be several causes of schizophrenia. Having schizophrenia at age 40 is unusual and it is rare to have a first onset after this age. The time of highest vulnerability is between the late teens and late 20s.

What is striking about Anthony is that his case illustrates that schizophrenia can affect anyone. Perhaps one reason that Anthony made a strong recovery was his ability to use his experience in a constructive manner – he created an art installation about his experience that attracted favourable reviews.

11.1 Classification of schizophrenia

'Schizophrenia is a generic name for a group of disorders, characterised by a progressive disintegration of emotional stability, judgement, contact with and appreciation of reality, producing considerable secondary impairment of personality, relationships and intellectual functioning.'
David Stafford-Clark (1964)

ON THE WEB

To watch a short film of Anthony giving an explanatory tour of his art exhibition that details what it's like to have a schizophrenic episode (which includes some swearing and references to drugs), go to **www.youtube.com** and search for 'The ghosts in my clothes'.

KEY TERMS

Classification of schizophrenia – the diagnosis of schizophrenia by reference to symptoms contained within official classification systems

Schizophrenia – a mental disorder characterised by withdrawal from reality

Type I schizophrenia – acute form characterised by positive symptoms and responsive to medication

Positive symptoms – the displaying of behaviours involving loss of touch with reality

Type II schizophrenia – chronic type characterised by negative symptoms and unresponsive to medication

Negative symptoms – the displaying of behaviours involving disruption of normal emotions and actions

Hallucinations – the perception of something being real that does not truly exist

Delusions – a false belief that is resistant to confrontation with the truth

People from all cultures and levels of society develop **schizophrenia** – 1 per cent of people suffer worldwide, but with differences in prevalence rates of between 0.33 per cent and 15 per cent. Schizophrenia is the world's most common mental disorder, accounting for up to 50 per cent of all mental patients. It is difficult to compile accurate statistics, due to inadequately agreed criteria for diagnosis, but there are between 24 million and 55 million people with schizophrenia worldwide.

Schizophrenia affects thought processes and the ability to determine reality. Degree of severity varies between individuals: some encounter only one episode, some have persistent episodes but live relatively normal lives through taking medication, while others have persistent episodes, are non-responsive to medication and remain severely disturbed. Schizophrenia may be a group of disorders, with different causes and explanations. Clinicians refer to **Type I schizophrenia**, an acute type characterised by **positive symptoms** and better prospects of recovery, and **Type II schizophrenia**, a chronic type characterised by **negative symptoms** and poorer prospects for recovery:

- **Positive symptoms** – involve the displaying of behaviours concerning loss of touch with reality, such as **hallucinations** and **delusions**. These generally occur in acute, short episodes, with more normal periods in between, and respond well to medication.
- **Negative symptoms** – involve the displaying of behaviours concerning disruption of normal emotions and actions. These occur in chronic, longer-lasting episodes, and are resistant to medication. Negative symptoms contribute most to people with schizophrenia not being able to function effectively in society, such as in relationships or at work.

To be diagnosed with schizophrenia, two or more symptoms must be apparent for more than one month, as well as reduced social functioning. Other differentiations are chronic onset schizophrenia, where individuals become increasingly disturbed through gradual withdrawal and motivational loss over a prolonged period, and acute onset schizophrenia, where symptoms appear suddenly, after a stressful incident.

Schizophrenia commonly occurs between 15 and 45 years of age, with an equal incidence rate between males and females, though males show onset at an earlier age.

Symptoms

Schneider (1959) detailed *first-rank symptoms* of schizophrenia, subjective experiences based on patients' verbal reports. Most are positive symptoms.

1 *Passivity experiences and thought disorders*: thoughts and actions are perceived as under external control – for example, by aliens. People with schizophrenia may believe that thoughts are being inserted, withdrawn or broadcast to others.

2 *Auditory hallucinations*: individuals experience voices, often insulting and obscene, inside their head, which form running commentaries, or discuss the sufferer's behaviour, anticipate their thoughts or repeat their thoughts out loud. These often occur with simultaneous delusions.

3 *Primary delusions*: individuals usually experience delusions of grandeur, believing they are someone important – for example, Jesus Christ reborn. Later, delusions become delusions of persecution, where a person believe someone wants to hurt them. Some people with schizophrenia experience only one type of these delusions.

Slater & Roth (1969) added four symptoms, observed directly from behaviour. Most are negative symptoms:

1 *Thought process disorders*: people with schizophrenia wander off the point, invent new words and phrases, stop mid-sentence, muddle their words, interpret language literally (for example, proverbs) and indulge in **speech poverty**, which is characterised by excessively brief replies to questions with minimal elaboration.
2 *Disturbances of effect*: individuals appear uncaring of others, display inappropriate emotional responses – for example, giggling at bad news – or display sudden mood swings.
3 *Psychomotor disturbances*: individuals adopt frozen, 'statue-like' poses, exhibit tics and twitches and repetitive behaviours – for example, pacing up and down.
4 **Avolition**: individuals display an inability to make decisions, have no enthusiasm or energy, lose interest in personal hygiene and lack sociability and affection.

KEY TERMS

Speech poverty – a negative symptom of schizophrenia, characterised by brief replies to questions and minimal elaboration

Avolition – a general lack of energy resulting in loss of goal-directed behaviour

ON THE WEB

Figure 11.2 Painting number 1

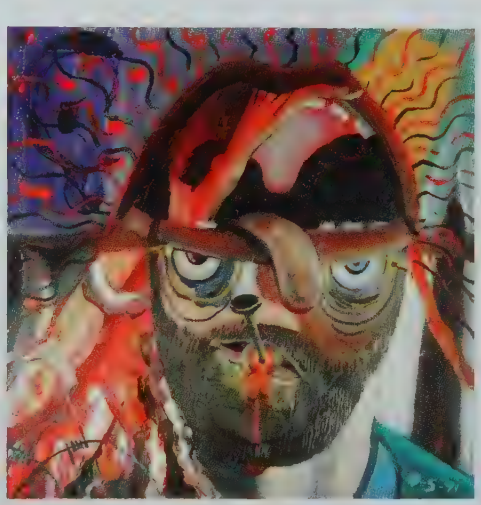


Figure 11.3 Painting number 9

Bryan Charnley was an artist and had schizophrenia. In an attempt to portray the experience of the disorder he reduced the medication on which he depended for stability and painted a series of 17 self-portraits as he descended into a world of inner torment. The final portrait was found on the easel in his studio where he took his own life. A video presentation of the portraits, alongside entries from Bryan's diary, can be found at **www.youtube.com**. Search for 'Bryan Charnley: The self portrait series'.

There is also a website about Bryan and his paintings at:

www.bryancharnley.info.

'Diagnosis is not the end but the beginning of treatment.'

Martin H. Fischer (1944)

Diagnosis of schizophrenia

Mental disorders are **diagnosed** by reference to classification systems that are based on the idea, similarly to physical illnesses, that a group of symptoms can be classed together as a syndrome (mental disorder), with an underlying cause and separate from all other mental disorders. The two commonly used classification systems are the **DSM-5** produced in the USA, and the **ICD-10** produced by the World Health Organization. Schizophrenia therefore is seen

KEY TERMS

Diagnosis – identification of the nature and cause of illness

DSM-5 – diagnostic classification system produced in the USA

ICD-10 – diagnostic classification system produced by the World Health Organization

as a separate mental disorder with a distinct set of symptoms that allows it to be diagnosed in a reliable and valid way.

Reliability

KEY TERM

Reliability – consistency of diagnosis

Reliability concerns the consistency of symptom measurement and affects diagnosis in two ways:

1 *Test-retest reliability* – occurs when a clinician makes the same diagnosis on separate occasions from the same information.

2 *Inter-rater reliability* – occurs when different clinicians make identical, independent diagnoses of the same patient.

Research

Beck *et al.* (1962) reported a 54 per cent concordance (similarity) rate between experienced practitioners' diagnoses when assessing 153 patients, while Söderberg *et al.* (2005) reported a concordance rate of 81 per cent using the DSM classification system. This suggests that classification systems have become more reliable over time. Interestingly, Nilsson *et al.* (2000) found only a 60 per cent concordance rate between practitioners using the ICD classification system, implying the DSM system is more reliable.

Read *et al.* (2004) reported test-retest reliability of schizophrenia diagnosis to have only a 37 per cent concordance rate, and noted a 1970 study in which 194 British and 134 US psychiatrists provided a diagnosis on the basis of a case description – 69 per cent of the Americans diagnosed schizophrenia, but only 2 per cent of the British did so. This suggests that the diagnosis of schizophrenia has never been fully reliable.

Seto (2004) reported that the term 'schizophrenia' was relabelled 'integration disorder' in Japan, due to the difficulty of attaining a reliable diagnosis, suggesting that schizophrenia, as a separate, identifiable disorder, does not exist.

Jakobsen *et al.* (2005) tested the reliability of the ICD-10 classification system in diagnosing schizophrenia. One hundred Danish patients with a history of psychosis were assessed using operational criteria, finding a concordance rate of 98 per cent, demonstrating the high reliability of clinical diagnosis of schizophrenia using up-to-date classifications.

Evaluation

The DSM classification system is more reliable than the ICD because the symptoms outlined for each category are more specific.

The reliability of schizophrenia diagnosis, assessed at 81 per cent, is superior to that for anxiety disorders, at 63 per cent. The reliability of schizophrenia diagnosis is also generally considered superior to the **validity** of schizophrenia diagnosis.

Even if reliability of diagnosis based on classification systems is not perfect, they do provide practitioners with a common language, permitting communication of research ideas and findings, which may ultimately lead to a better understanding of the disorder and the development of effective treatments.

Evidence generally suggests that reliability of diagnoses has improved as classification systems have been updated.

KEY TERM

Validity – accuracy of diagnosis

Validity

Validity concerns how accurate diagnosis is. For valid diagnoses to occur, schizophrenia should be a disorder separate from all other disorders, as categorised by symptoms through the use of classification systems. There are several ways in which validity can be assessed:

1 *Reliability* – a valid diagnosis must first be reliable, though reliability in itself does not guarantee validity will occur, it is just the first step towards establishing validity.
2 *Predictive validity* – if diagnosis leads to successful treatment, then diagnosis is seen as valid.
3 *Descriptive validity* – to be valid, patients with schizophrenia should differ in symptoms from patients with other disorders.
4 *Aetiological validity* – to be valid, all people with schizophrenia should have the same cause for the disorder.

ON THE WEB

How difficult is it to diagnose schizophrenia? To watch a film that focuses on the diagnosis of four patients through their symptoms, go to **www.youtube.com** and search for 'How is schizophrenia diagnosed – four patients'.

CLASSIC RESEARCH

CLASSIC RESEARCH

'On being sane in insane places' – Rosenhan (1973)

Figure 11.4 David Rosenhan's classic study brings the validity of schizophrenia diagnosis into question

It would be expected that psychiatrists make valid diagnoses – that is, correctly identify the mental disorders people suffer from. However, Dr David Rosenhan, in his famous study, showed this was not necessarily true.

Aim

To test the validity of schizophrenia diagnosis using the DSM-II classification system.

Procedure

Eight volunteers who did not suffer with mental illness presented themselves to different mental hospitals, claiming to hear voices. All were admitted and acted normally. Time taken to be released and reactions to them were recorded.

Later, a hospital was informed that an unspecified number of pseudo-patients would attempt entry over a three-month period. The number of suspected impostors was recorded.

Findings

The eight volunteers took between 7 and 52 days to be released, diagnosed as having schizophrenia in remission. Normal behaviours were interpreted as signs of schizophrenia. However, 35 out of 118 actual patients suspected that the volunteers were sane.

During the subsequent three-month period, 193 patients were admitted, of whom 83 aroused suspicions of being false patients.

No actual pseudo-patients attempted admission.

Conclusions

The diagnosis of schizophrenia lacks validity, as psychiatrists cannot distinguish between real and pseudo-patients.

Evaluation

- It is not usual for people to fake insanity to gain admission to mental hospitals, and clinicians are there to help people, not turn them away. This could explain the admission of the original eight volunteers. The original results can also be explained by an expectation effect: the doctors expected them to be ill and looked for evidence to verify this. Their nervousness of the situation they found themselves in contributed to this.
- Being diagnosed as schizophrenic is a 'sticky label' – difficult to remove, with serious consequences – and yet it is manufactured by psychiatrists with low degrees of accuracy.

RESEARCH IN FOCUS

How does Rosenhan's study suggest that the diagnosis of schizophrenia may lack validity?

Explain also why diagnoses have first to be reliable to be valid and why reliability of diagnosis does not guarantee a diagnosis being valid.

What are the difficulties in establishing whether diagnoses of schizophrenia are reliable and valid?

Research

Mason *et al.* (1997) tested the ability of four different classification systems of diagnosis to predict the outcome of the disorder (over a 13-year period) in 99 schizophrenic patients, finding more modern classification systems had high predictive validity, especially if only symptoms that lasted at least six months were considered. This suggests that predictive diagnosis has improved over time, as classification systems have been updated.

Birchwood & Jackson (2001) argue that as 20 per cent of people with schizophrenia recover and never have another episode, but 10 per cent are so affected they commit suicide, there is too much variety in the outcomes of schizophrenia for predictive validity to be supported.

Jäger *et al.* (2003) found that it was possible to use ICD-10 to distinguish 951 cases of schizophrenia from 51 persistent delusional disorders, 116 cases of acute and transient psychotic disorders and 354 schizoaffective disorders, with schizophrenic patients having more pronounced negative symptoms and lower overall functioning. This suggests that diagnosis has high descriptive validity.

Baillie *et al.* (2009) surveyed 154 British psychiatrists to find that other than an agreement as to the influence of genetics, biochemical abnormalities and substance abuse, they had widely differing views on the causes of schizophrenia. This suggests that the aetiological validity of schizophrenia is low, though that of depression was even lower.

Allardyce *et al.* (2006) reported that because there is a lot of difference between patients in what groupings of symptoms they experience, it is not possible to diagnose schizophrenia as a separate disorder, which suggests diagnoses are not valid. This was supported by Jansson & Parnas (2007), who reviewed 92 studies that applied different definitions of schizophrenia to the same patient samples to find that both ICD-10 and DSM-IV, while showing moderate levels of reliability, indicated only low measures of validity, again suggesting schizophrenia may not exist as a separate condition.

Evaluation

The predictive validity of schizophrenia diagnosis is low because different patients experience such a wide range of symptoms.

The incidence of schizophrenia is 1 per cent, while for OCD it is 3 per cent. However, the incidence of schizophrenia with co-morbid (simultaneous) OCD is much higher than probability would suggest, which implies the existence of a separate schizo-obsessive disorder

and that the validity of schizophrenia diagnosis is low, as schizophrenia is not a disorder separate from all other disorders.

Bentall (2003) claims that the diagnosis of schizophrenia says nothing about its cause, implying diagnosis to be invalid. Diagnosis also says nothing about prevalence rates, which differ widely from rural to urban environments, again suggesting diagnosis to be invalid.

Being labelled schizophrenic has a long-lasting, negative effect on social relationships, work prospects, self-esteem, etc., which seems unfair when diagnoses of schizophrenia are seemingly made with little evidence of validity.

Although there is an argument for abolishing diagnoses of schizophrenia as scientifically invalid and damaging to those diagnosed with it, Kendell & Jablensky (2007) argue that diagnostic categories are justifiable, as they give clinicians an agreed framework to investigate and discuss people's clinical experiences, so that a greater understanding can be reached and effective therapies developed.

Co-morbidity

Co-morbidity is where one or more additional disorders or diseases occur simultaneously with schizophrenia and can create problems with reliability of diagnosis, as there may be confusion over which actual disorder is being diagnosed. People with schizophrenia often suffer from forms of depression, as well as schizophrenia, at the same time. Co-morbidity also raises issues of descriptive validity, as having simultaneous disorders suggests that schizophrenia may not actually be a separate disorder.

KEY TERM

Co-morbidity – the presence of one or more additional disorders or diseases simultaneously occurring with schizophrenia

Research

Sim *et al.* (2006) reported that 32 per cent of 142 hospitalised people with schizophrenia had an additional mental disorder, illustrating the problem that co-morbidity can create in achieving reliable and valid diagnosis of schizophrenia.

Goldman (1999) reported that 50 per cent of people with schizophrenia had a co-morbid medical condition, such as substance abuse or polydipsia (excessive thirst), making reliable and valid diagnosis of schizophrenia problematic.

Buckley *et al.* (2009) reported that an estimated 50 per cent of people with schizophrenia had co-morbid depression, 15 per cent co-morbid panic disorder, 29 per cent post-traumatic stress disorder and 23 per cent obsessive-compulsive disorder, with an additional 47 per cent of patients diagnosed with co-morbid substance abuse. This again illustrates the difficulties in reliably and validly diagnosing schizophrenia.

Evaluation

Jeste *et al.* (1996) state that people with schizophrenia with co-morbid conditions are excluded from research and yet form the majority of patients, which suggests that research findings into the causes of schizophrenia cannot be generalised to most patients. This also has a knock-on effect as to what treatments such patients should receive.

The high levels of certain co-morbid disorders found in people with schizophrenia have led to some arguing that such co-morbidities are actually separate sub-types of the disorder.

- The biggest problem in reliably diagnosing schizophrenia is differentiating it from bipolar disorders (manic depression). Schizophrenia-related changes in mood often include mania and depression, but such changes often do not meet classification system criteria for diagnosis of separate bipolar conditions.
- Alcohol, cannabis and cocaine are substances frequently abused by people with schizophrenia and not only does such co-morbid substance abuse make reliable and valid diagnosis of schizophrenia difficult to achieve, it also leads to lower levels of functioning, increased hospitalisations and lower compliance with medication, which makes effective treatment more difficult to achieve.

Culture bias

KEY TERM

Culture bias – the tendency to over-diagnose members of other cultures as having schizophrenia

Culture bias concerns the tendency to over-diagnose members of other cultures as suffering from schizophrenia. In Britain, for example, people of Afro-Caribbean descent are much more likely than white people to be diagnosed as schizophrenic. Also Afro-Caribbean people with schizophrenia in Britain are more likely to be compulsorily confined in 'closed' (secure) hospitals than white people with schizophrenia, with the accusation being that most British psychiatrists are white and thus more likely to perceive black people with schizophrenia as more 'dangerous' than white people with schizophrenia. There is also the possibility that the heightened stress levels people from ethnic minorities experience, from poverty and racism for instance, may contribute to higher levels of schizophrenia in such cultural groups.

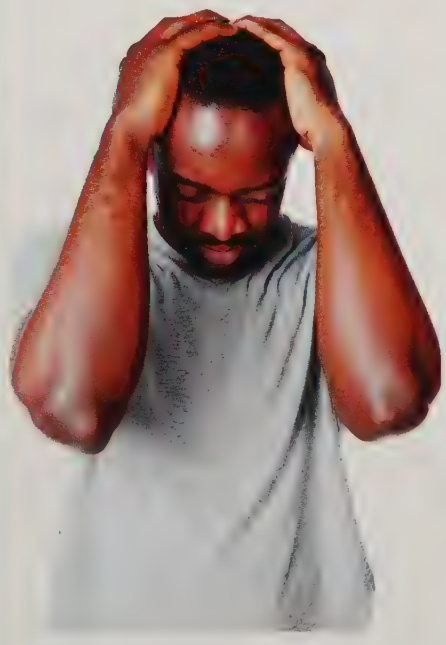


Figure 11.5 Are heightened levels of schizophrenia in some ethnic minorities due to cultural bias in diagnosis?

Research

Cochrane (1977) reported the incidence of schizophrenia in the West Indies and Britain to be similar, at around 1 per cent, but that people of Afro-Caribbean origin are seven times more likely to be diagnosed with schizophrenia when living in Britain. This suggests either that Afro-Caribbean people living in Britain have more stressors leading to schizophrenia, or that invalid diagnoses are being made due to cultural bias.

McGovern & Cope (1977) reported that two thirds of patients detained in Birmingham hospitals were first- and second-generation Afro-Caribbeans, the other third being white and Asian, suggesting a cultural bias to over-diagnose schizophrenia in the black population.

Ineichen (1984) reported that 32 out of 89 confinements in 'closed' wards in Bristol hospitals were of non-white patients, which is a much greater proportion than that of non-white people in general society, suggesting a tendency to see non-white people with schizophrenia as more dangerous than their white counterparts.

Whaley (2004) believes the main reason for the incidence of schizophrenia among black Americans (2.1 per cent) being greater than among white Americans (1.4 per cent) is cultural bias, where ethnic differences in symptom expression are overlooked or misinterpreted by practitioners. This suggests a lack of validity in diagnosing schizophrenia cross-culturally.

Evaluation

- Fernando (1988) argues that people from ethnic minorities experience greater levels of racism, poverty, etc. than the white population and so higher levels of schizophrenia, triggered by such stressors, should be expected. However, this view is weakened as Cochrane (1983) points out that the only ethnic minority to experience higher levels of diagnosed schizophrenia in Britain are Afro-Caribbean people. One suggested possibility is that Afro-Caribbean people have little immunity to flu and children born to mothers who had flu while pregnant have an 88 per cent increased chance of developing schizophrenia.
- Rack (1982) points out that in many cultures it is normal to see and hear recently deceased loved ones (it is part of the grieving process), but people exhibiting such behaviour in Western culture are liable to be diagnosed as schizophrenic.
- Cochrane & Sashidharan (1995) argue that the racism and social deprivation immigrants suffer are bound to negatively affect mental health, but that clinicians wrongly attribute their behaviour to their ethnicity.

Gender bias

There is some disagreement between psychologists over the gender prevalence rate of schizophrenia. The accepted belief was that males and females were equally vulnerable to the disorder. However, some argue that clinicians, the majority of whom are men, have misapplied diagnostic criteria to women, and more recent studies show that there may be up to 50 per cent more male individuals with schizophrenia.

There is also a **gender bias** in the fact that when making diagnoses, clinicians often fail to consider that males tend to suffer more negative symptoms than women and have higher levels of substance abuse and that females have better recovery rates and lower relapse rates.

Clinicians also have tended to ignore the fact that there are different predisposing factors between males and females, which give them different vulnerability levels at different points of life.

There are gender differences in the classification of schizophrenia, too, with first onset occurring earlier in males, at between 18 and 25 years, than for females, at between 25 and 35 years. First onset for females is generally between 4 and 10 years later than in males. There are two peaks for male schizophrenia, at ages 21 and 39, while there are three peaks for females, at 22, 37 and 62 years of age.

Research

Lewin *et al.* (1984) found that if clearer diagnostic criteria were applied, the number of female individuals with schizophrenia became much lower, suggesting a gender bias in original diagnosis. This was supported by Castle *et al.* (1993), who found using more restrictive diagnostic criteria that the male incidence of the disorder was more than twice that of females.

Reichler-Rossler & Hafner (2000) reported that males have more severe negative symptoms, which was reinforced by Galderisi *et al.* (2012) finding

KEY TERM

Gender bias – the tendency for diagnostic criteria to be applied differently to males and females and for there to be differences in the classification of the disorder

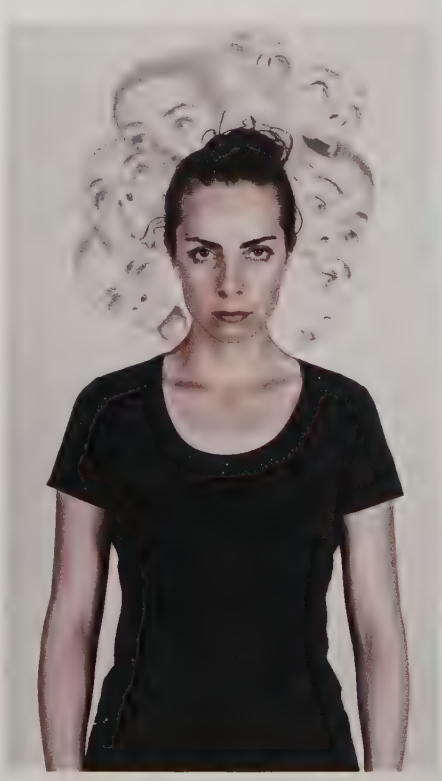


Figure 11.6 Females tend to have first onset of schizophrenia at a later age than males

males scored higher for negative symptoms. This, coupled with Hambrecht & Häfner (2000) finding male patients had higher levels of substance abuse and Haro *et al.* (2008) reporting that relapse rates are higher in males but recovery rates are higher with females, suggests a gender bias in clinicians not considering such important factors when making diagnoses.

Kulkarni *et al.* (2001) found that the female sex hormone *estradiol* was effective in treating schizophrenia in women when added to antipsychotic therapy, which suggests there may be different protective and predisposing factors in male and female vulnerability to schizophrenia which clinicians are not considering at diagnosis.

Evaluation

- The fact that females also tend to first develop schizophrenia on average between four and ten years later than males and that women can develop a much later form of post-menopausal schizophrenia suggests there are different types of schizophrenia to which males and females are vulnerable, calling into question the validity of diagnosis.
- Research findings indicate that there is a case to be made for different diagnostic considerations when diagnosing males and females. However, this would cast doubts on the validity of schizophrenia as a separate disorder.
- Differences in the ages at which males and females experience schizophrenia may be related to differences in the types of stressors both sexes experience at different ages and to age-related variations in female menstrual cycles.

Symptom overlap

KEY TERM

Symptom overlap – the perception that symptoms of schizophrenia are also symptoms of other mental disorders

In diagnosing schizophrenia, symptoms of the disorder are often also found with other disorders, which makes it difficult for clinicians to decide which particular disorder someone is suffering from. **Symptom overlap** especially occurs with bipolar disorder, where depression is a common symptom, as well as hallucinations. Symptom overlap can also occur with autism, as well as with cocaine intoxication.

Research

Serper *et al.* (1999) assessed patients with co-morbid schizophrenia and cocaine abuse, cocaine intoxication on its own and schizophrenia on its own. They found that although there was considerable symptom overlap in patients with schizophrenia and cocaine abuse, it was possible to make accurate diagnoses.

Konstantareas & Hewitt (2001) compared 14 patients with autism with 14 patients with schizophrenia to find none of the patients with schizophrenia had symptoms of autism, but 7 of the autistics had symptoms of schizophrenia, showing some support for the idea of symptom overlap.

Ophoff *et al.* (2011) assessed genetic material from 50,000 participants to find that of seven gene locations on the genome associated with schizophrenia, three of them were also associated with bipolar disorder, which suggests a genetic overlap between the two disorders.

Evaluation

The fact that there is genetic overlap between mental disorders suggests that gene therapies might be developed which simultaneously treat different disorders.

One recently developed method of ascertaining which particular disorder someone is suffering with is to examine the grey matter content of the brain, as people with schizophrenia can experience a decrease of grey matter, while people with bipolar disorder do not.

Ketter (2005) reports that misdiagnosis due to symptom overlap can lead to years of delay in receiving relevant treatment, during which time suffering and further degeneration can occur, as well as high levels of suicide.

STRENGTHEN YOUR LEARNING

1. Describe *Type I* and *Type II* schizophrenia.
2. Summarise *positive* and *negative* symptoms of schizophrenia.
3. Explain how classification systems categorise mental disorders.
4. Refer to research evidence to assess the extent to which diagnoses of schizophrenia are i] reliable, ii] valid.
5. What other evaluative points can be made about the reliability and validity of schizophrenia diagnoses?
6. Explain how co-morbidity creates problems with reliability and validity of schizophrenia diagnoses.
7. For what reasons might people of Afro-Caribbean origin be seven times more likely to be diagnosed with schizophrenia when living in Britain?
8. In what ways might gender bias be applicable to the classification and diagnosis of schizophrenia?
9. What types of symptom overlap can occur with schizophrenia?

PSYCHOLOGY IN THE REAL WORLD

The use of gene mapping to identify genes associated with schizophrenia opens up the possibility of gene therapies to treat the disorder. Mei *et al.* (2013) found that by targeting the expression of the gene neuregulin 1, which is over-expressed in humans with schizophrenia, they could reverse behavioural and brain abnormalities in mice exhibiting schizophrenia features (they interacted less and performed poorly on tasks requiring thinking). The gene is known to make a protein important for brain development.

Researchers are excited by the prospect of a treatment that may actually 'cure' the disorder by permanently removing all signs of schizophrenic symptoms, rather than merely suppressing them through drug therapies. However, we shouldn't get too excited yet, as there is a big difference between removing 'schizophrenia-like' features in mice and actually removing schizophrenic symptoms in humans.

ASSESSMENT CHECK

1 Janelle has been diagnosed as suffering from schizophrenia. It began when she started hearing voices in her head criticising her behaviour and she became convinced that she been chosen by alien beings for a special purpose. Friends noticed that it became increasingly difficult to make sense of Janelle's speech and she would give only brief answers to their questions. She also became untidy and unenthusiastic about life in general, spending hours pacing up and down her room.

Make reference to the scenario above concerning Janelle to discuss negative and positive symptoms of schizophrenia. **[4 marks]**

2 Place a letter 'R' next to the two statements in the following list that relate to reliability of diagnosis and a letter 'V' next to the two statements that relate to validity of diagnosis. One statement will be left over. **[4 marks]**

- Where a clinician makes the same diagnosis on separate occasions from the same information.
- Where patients with schizophrenia differ in symptoms from patients with other disorders.
- Where patients with schizophrenia all have the same cause for their disorder.
- Where patients with schizophrenia are given combinations of treatments.
- Where different clinicians make identical, independent diagnoses of the same patient.

3 In reference to schizophrenia, outline what is meant by co-morbidity. **[2 marks]**

4 Explain why, when researching symptom overlap in schizophrenia, it may be difficult to obtain informed consent from patients. **[2 marks]**

5 Discuss culture and gender bias in the diagnosis and classification of schizophrenia. **[16 marks]**

'Schizophrenia cannot be understood without understanding despair.'
R. D. Laing (1960)

'After a century of studying schizophrenia, the cause of the disorder remains unknown.'
Thomas R. Insel (2010)

11.2 Biological explanations for schizophrenia

There are several **biological explanations for schizophrenia**, which see the disorder as determined by physiological means. The biological factors focused on here are genetics, abnormal dopamine functioning and neural correlates. Although causes of schizophrenia are not fully understood, research does indicate that biological factors play a major role in the development of the disorder.

Genetics

The **genetic explanation** sees schizophrenia as transmitted through hereditary means, i.e. through the genes passed on to individuals from their families. It is not believed that there is a single 'schizophrenic gene', but that several genes are involved, which increase an individual's overall vulnerability to developing schizophrenia.

Research traditionally used twin, family and adoption studies to assess concordance rates of developing schizophrenia between people with different levels of genetic relatedness, but more recently gene-mapping studies have been used that look for genetic material commonly found among individuals with schizophrenia. Such research has identified a number of genes that seem to exert an influence.

Research

Gottesman & Shields (1976) reviewed five twin studies and reported a concordance rate of between 75 per cent and 91 per cent for MZ (identical) twins with severe forms of schizophrenia, suggesting that genetics plays a larger role with chronic forms of the disorder. Torrey *et al.* (1994), reviewing evidence from twin studies, found that if one MZ twin develops schizophrenia, there is a 28 per cent chance that the other twin will do so too, supporting the idea that schizophrenia is inherited.

Kety & Ingraham (1992) found that prevalence rates of schizophrenia were ten times higher among genetic than adoptive relatives of people with schizophrenia, suggesting that genetics plays a greater role than environmental factors.

Varma & Sharma (1993) found a concordance rate of 35 per cent for first-degree relatives of individuals with schizophrenia, compared with 9 per cent in first-degree relatives of people without schizophrenia, indicating a role for genetic factors. Additionally, Parmas *et al.* (1993) conducted a longitudinal family study of schizophrenia, finding that 16 per cent of children whose mothers had schizophrenia developed the disorder, compared with 2 per cent of children whose mothers did not have schizophrenia, again suggesting a genetic link.

KEY TERMS

Biological explanations for schizophrenia – theories of schizophrenia that see the disorder as resulting from physiological processes, such as genetics, abnormal dopamine functioning and neural correlates

Genetic explanation – transmission of abnormality by hereditary means

ON THE WEB

To watch an absorbing documentary about schizophrenia and its possible causes, including a focus on a pair of identical twins where one has the disorder and one does not, go to **www.youtube.com** and search for 'Schizophrenia: Stolen minds, stolen lives'.

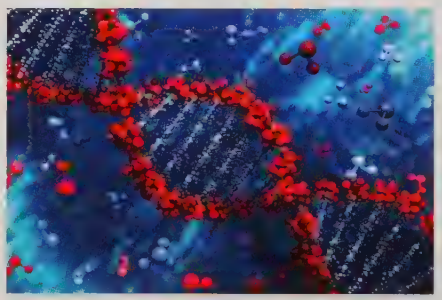


Figure 11.7 Several genes are suspected of being involved in the development of schizophrenia

Gurling *et al.* (2006) used evidence from family studies indicating that schizophrenia was associated with chromosome 8p21-22 to identify a high-risk sample. Using gene mapping, the PCM1 gene was implicated in susceptibility to schizophrenia, providing more evidence for genetics. Additionally, Benzel *et al.* (2007) used gene mapping to find evidence suggesting that NRG3 gene variants interact with both NRG1 and ERBB4 gene variants to create a susceptibility to developing schizophrenia, suggesting an interaction of genetic factors.

Avramopoulos *et al.* (2013) sequenced genes associated with the neuregulin signalling pathway, which relays signals within the nervous system. They found that some families with high levels of schizophrenia had multiple neuregulin signalling-related variants while others had none. Patients with neuregulin signalling variants experienced more hallucinations but less impairment than the other schizophrenia patients. The findings suggest that individually harmless genetic variations, which affect related biochemical processes, may unite to increase vulnerability to schizophrenia, but additionally provide support for the idea that schizophrenia is not a single disease at all but a group of related disorders. Patients without neuregulin signalling-related variants have variants in a different pathway and thus different symptoms.

The Schizophrenia Working Group of the Psychiatric Genomics Consortium (2014) analysed the DNA of 36,989 patients with schizophrenia and 113,000 people without schizophrenia, to identify 128 independent genetic variations at 108 locations on the human chromosomes that contribute most to developing schizophrenia. Of these, 83 had not been identified before. Associations were higher in genes expressed in the brain and in tissues with important roles in immunity, supporting the overall idea of biological causation, but especially illustrating a link between the immune system and schizophrenia.

Evaluation

- Twin studies suggest a genetic factor in the onset of schizophrenia, but do not consider the influence of social class and socio-psychological factors between twins. Twin and family studies also fail to consider shared environmental influences.
- Sorri *et al.* (2004) performed a longitudinal study over 21 years on Finnish adoptees with biological mothers with schizophrenia, comparing them with adoptees whose biological mothers did not have schizophrenia, but also considered family rearing styles among adoptive families. Adoptees with a high genetic risk of developing schizophrenia were more sensitive to non-healthy rearing patterns, suggesting that environmental factors are important, too.
- If genes caused schizophrenia on their own, concordance rates between MZ twins would be 100 per cent, which they are not. Twin studies also produce confusing evidence, with heritability estimates ranging from 58 per cent for MZ twins down to as low as 11 per cent.
- Leo (2006) argues that Kety's adoption study evidence is not convincing as sample sizes were small, making generalisation difficult, and many of the biological relatives with schizophrenia were distant relatives, such as half-siblings, with low biological similarity.
- Hedgecoe (2001) believes that scientists have portrayed schizophrenia as a genetic disease by using evidence from twin and adoption studies in a biased way to 'produce a narrative about schizophrenia which subtly prioritises genetic explanations'.
- Findings from genetic studies provide evidence for the diathesis-stress model, where individuals inherit different levels of genetic predisposition to developing schizophrenia, but ultimately it is environmental triggers that determine whether individuals go on to develop schizophrenia.
- Gene mapping offers the possibility of developing tests to identify high-risk individuals, though this raises socially sensitive and ethical concerns.

YOU ARE THE RESEARCHER

Design a study using identical twins to assess the genetic explanation of schizophrenia. What type of study would this be? What would the hypothesis be for this study? What type of graph would be used to plot your data?

Would it be possible to establish causality in this study? Explain your answer.

Neural correlates (including the dopamine hypothesis)

The idea of **neural correlates** is that abnormalities within specific brain areas may be associated with the development of schizophrenia. Originally evidence was limited to post-mortems conducted upon the brains of deceased people with schizophrenia, but research now uses non-invasive scanning techniques, such as functional magnetic resonance imagery (fMRI), which gives a picture of the brain in action through use of magnetic fields and radio waves. In this way the functioning of the brains of people with schizophrenia can be compared with that of people without schizophrenia, to identify brain areas that may be linked to schizophrenia. This is best achieved by giving tasks to participants associated with types of functioning known to be abnormal in people with schizophrenia, for example social cognition, thought processing and working memory tasks.

KEY TERM

Neural correlates – that the development of schizophrenia is related to structural and functional brain abnormalities, including biochemical ones

One important consideration is whether brain abnormalities found in people with schizophrenia are caused by genetic factors or are a result of the disorder itself. This can be investigated by comparing the brains of patients with non-schizophrenic family members; if similar brain abnormalities are found in non-suffering family members as well as those with the disorder, it suggests a genetic link.

Research focused on people with schizophrenia having enlarged ventricles (the fluid-filled gaps between brain areas) (see Figure 11.8). Enlarged ventricles are especially associated with damage to central brain areas and the prefrontal cortex, which more recent scanning studies have also linked to the disorder. Such damage has often been associated with negative symptoms.

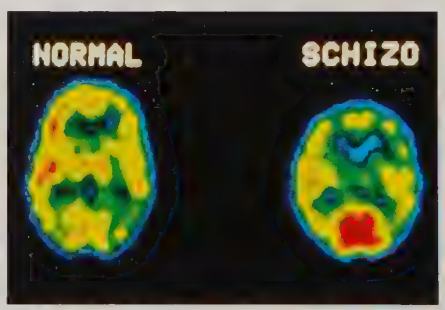


Figure 11.8 Scans can reveal structural differences between the brains of people with schizophrenia and those without the condition

Research

Johnstone *et al.* (1976) found that people with schizophrenia had enlarged ventricles, while people without schizophrenia did not, which suggests schizophrenia is related to a loss of brain tissue. Weyandt (2006) reported that enlarged ventricles are associated with negative symptoms only, which implies enlarged ventricles cannot explain all symptoms and incidences of schizophrenia.

Tilo *et al.* (2001) gave fMRI scans to six patients with schizophrenia and six people without schizophrenia while they looked at and spoke about Rorschach ink-blots. In the schizophrenic patients it was found that the severity of thought disorder, a core symptom of schizophrenia, was negatively correlated with the level of activity in the Wernicke brain area, a region associated with the production of coherent speech, supporting the idea of abnormal functioning in specific brain areas being related to schizophrenia.

Li *et al.* (2010) performed a meta-analysis of fMRI studies investigating the difficulties patients with schizophrenia often have in processing facial

emotions, to find that although both people with and without schizophrenia activate the bilateral amygdala and right fusiform gyri when processing facial emotions, the activation was severely limited in patients with schizophrenia. This suggests that abnormal brain functioning in patients with schizophrenia may explain their difficulties in processing facial emotions.

Boos *et al.* (2012) performed MRI scans on 155 patients with schizophrenia, 186 of their non-schizophrenic siblings and 122 non-related patients with schizophrenia, to find schizophrenic participants had decreased grey matter density and cortical thinning compared with the other participants. This suggests brain tissue differences in patients with schizophrenia are an effect of having the disorder rather than being due to genetic factors.

Yoon *et al.* (2013) used fMRI scans to examine the brains of 18 patients with schizophrenia and 19 people without schizophrenia performing a memory task. The patients with schizophrenia had heightened activity in the substantia nigra, decreased activity in the prefrontal cortex and diminished connectivity between these brain regions. Also, the higher the level of connectivity between the substantia nigra and the striatum, the stronger the symptoms of schizophrenia were. This suggests that abnormal functioning of the prefrontal cortex–basal ganglia brain circuit may be related to the cognitive deficits experienced by patients with schizophrenia.

Evaluation

Some people without schizophrenia have enlarged ventricles, while not all patients with schizophrenia do, which goes against the idea of schizophrenia being linked to loss of brain tissue.

It appears to be patients with schizophrenia who do not respond to medication who mainly exhibit enlarged ventricles. This could mean that it is an effect of suffering from schizophrenia over a long period that leads to physical brain damage rather than brain damage leading to schizophrenia.

When assessing the role that brain abnormalities play in the development of schizophrenia, consideration must also be given to environmental factors, such as substance abuse and stress levels, which may also be having a damaging influence upon brain tissue.

It may be that schizophrenic patients who do not respond to medication do not do so because structural brain damage does not allow anti-psychotic medications to have an effect in reducing symptom levels.

Structural brain damage is often evident at first onset of schizophrenia, but only by performing longitudinal studies would it be possible to assess whether damage progressively worsens as the disorder continues. Ho *et al.* (2003) performed MRI scans on recent-onset patients and re-scanned them three years later. They found evidence of brain damage in the recent-onset patients, which worsened over time (even though they received medication), especially in the frontal lobes, which correlated with an increase in the severity of their symptoms. This suggests brain damage does increase in people with schizophrenia over time.

The dopamine hypothesis

The **dopamine hypothesis** centres on the idea that the neurotransmitter dopamine is linked to the onset of the disorder. Dopamine acts to increase the rate of firing of neurons during synapse (a process where neurotransmitters help transmit signals across gaps between nerve fibres), which enhances communication between neurons. However, Snyder (1976) argued that if too much dopamine is released during synapse it can lead to the onset of schizophrenia. The theory developed after it was discovered that phenothiazines, antipsychotic drugs that lessen the symptoms of schizophrenia, seem to work by decreasing dopamine activity. Also, the dopamine-releasing drug L-dopa creates schizophrenic symptoms in people without schizophrenia. Other drugs influencing the dopaminergic system, such as LSD, a hallucinogenic, also create schizophrenic-like behaviour in people without schizophrenia and heighten symptoms in people with schizophrenia. It is probable that genetic factors are linked to faulty dopaminergic systems in those with schizophrenia.

Davis *et al.* (1991) updated the theory because high levels of dopamine are not found in all patients with schizophrenia, and the modern anti-schizophrenic drug clozapine, with very little dopamine-blocking activity, works effectively against the disorder. Davis *et al.* suggested that high levels of dopamine in the *mesolimbic dopamine system* are associated with positive symptoms, while high levels in the *mesocortical dopamine system* are associated with negative symptoms.

The neurotransmitter glutamate may be involved, too, as there is reduced function of the NMDA glutamate receptor in people with schizophrenia, with dopamine involved, as dopamine receptors restrict the release of glutamate.

KEY TERM

Dopamine hypothesis – that the development of schizophrenia is related to abnormal levels of the hormone and neurotransmitter dopamine

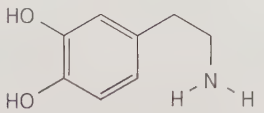


Figure 11.9 The dopamine molecule – the neurotransmitter dopamine has been linked to the onset of schizophrenia

Research

Randrup & Munkvad (1966) created schizophrenic-like behaviour in rats by giving them amphetamines, which activate dopamine production, and then reversed the effects by giving them neuroleptic drugs, which inhibit the release of dopamine, supporting the dopamine hypothesis.

Iversen (1979) reported that post-mortems on people who had had schizophrenia found excess dopamine in the limbic system, suggesting that the neurotransmitter is involved in the disorder.

Kessler *et al.* (2003) used PET and MRI scans to compare people with schizophrenia with people without schizophrenia, finding that the people with schizophrenia had elevated dopamine receptor levels in the basal forebrain and substantia nigra/ventral tegemental brain areas. Differences in cortical dopamine levels were also found, suggesting that dopamine is important in the onset of schizophrenia.

Javitt *et al.* (2000) found that glycine, a glutamate receptor agonist, reversed phencyclidine hydrochloride-induced psychosis (which closely resembles schizophrenia) in rats and brought about improvements in people with schizophrenia, lending support to the glutamate theory.

Javitt (2007) reported that the drugs phencyclidine and ketamine induce schizophrenic symptoms in people without schizophrenia by blocking neurotransmission at NMDA-type glutamate receptors, which leads to abnormal dopamine system functioning in striatal and prefrontal brain areas, supporting the idea of a connection between dopamine and glutamate in the onset of schizophrenia.

Evaluation

- Overall the evidence is inconclusive, as there is no consistent difference in dopamine levels between drug-free schizophrenic patients and people without schizophrenia.
- Several neurotransmitters may be involved in the development of schizophrenia. Along with dopamine and glutamate, newer anti-schizophrenic drugs implicate serotonin's involvement, too.
- Healy (2000) believes that pharmaceutical companies were keen to see the dopamine theory promoted, as they would make huge profits from manufacturing anti-schizophrenic drugs that inhibited dopamine production.
- The theory cannot explain why patients only recover slowly when given neuroleptic drugs, when the medication has an instant effect on dopamine levels.
- Lloyd *et al.* (1984) believe that even if dopamine is a causative factor, it may be an indirect factor mediated through environmental factors, because abnormal family circumstances can lead to high levels of dopamine which in turn trigger schizophrenic symptoms.
- Differences in the biochemistry of people with schizophrenia could just as easily be an effect rather than a cause of the disorder.
- Dopamine seems to be associated more with positive symptoms, so it may contribute only to certain aspects of the disorder. Alternatively, this could also suggest that there are several types of schizophrenia, with dopamine linked to certain types only.
- The dopamine hypothesis can be accused of being over-simplistic, as many other neurotransmitters may also be involved in the development of schizophrenia.

STRENGTHEN YOUR LEARNING

1. What methods are used to assess the genetic explanation? How does each of these methods work?
2. To what extent does research evidence support the genetic explanation?
3. What other evaluative points can be made concerning the genetic explanation?
4. Explain how dopamine may be involved in the experience of schizophrenia.
5. To what extent does research evidence support the dopamine hypothesis?
6. What other evaluative points can be made concerning the dopamine hypothesis?
7. What methods are used to investigate possible associations between neural correlates and schizophrenia?
8. Summarise what research evidence suggests about neural correlates and schizophrenia.
9. What other evaluative points can be made concerning neural correlates and schizophrenia?

PSYCHOLOGY IN THE REAL WORLD

Rethink Mental Illness.

Figure 11.10 Rethink Mental Illness

Although many forms of clinical therapy exist, one of the best sources of help for people with schizophrenia can be self-help support groups, such as Rethink Mental Illness. Such groups are encounter or personal growth associations, like Alcoholics Anonymous, that provide a setting in which people who share similar experiences come together to offer practical and emotional support in a non-critical, sharing and mutually beneficial manner. They are based on humanistic psychology (see page 233), an approach perceiving humans as inherently good and motivated to improve themselves. Such groups benefit from the growth of the internet, where vulnerable people can discuss their problems, support each other and get advice in a virtual environment without having to meet physically. Internet groups are often the first step to joining a physical group.

Some believe that self-help support groups actually maintain and even trigger mental disorders, but many self-help support groups have provided the route by which people have sought and obtained psychological help, and without them many disturbed individuals' futures would be a lot worse.

ON THE WEB

Rethink Mental Illness is a charity that believes a better life is possible for people affected by mental illness. For more than 40 years they have brought people together to support each other. They run services and support groups that change people's lives and they challenge attitudes about mental illness. Find them at: **www.rethink.org**.

'When you treat a disease, first treat the mind.'
Chen Jen (2010)

KEY TERMS

Psychological explanations for schizophrenia – theories of schizophrenia that see the disorder as resulting from non-physiological processes, such as family dysfunction and cognitive explanations

Family dysfunction – the idea that dysfunctional family relationships and patterns of communication are related to the development of schizophrenia

11.3 Psychological explanations for schizophrenia

There are several **psychological explanations for schizophrenia**. Here we focus on **family dysfunction** and cognitive explanations, including dysfunctional thought processing.

Family dysfunction

The family dysfunction explanation sees maladaptive relationships and patterns of communications within families as sources of stress, which can cause or influence the development of schizophrenia (see Figure 11.11).

Parents of people with schizophrenia often display three types of dysfunctional characteristics:

1 High levels of interpersonal conflict (arguments).
2 Difficulty communicating with each other.
3 Being excessively critical and controlling of their children.

Figure 11.11 Dysfunctional families are associated with high levels of schizophrenia (photo posed by models)

ON THE WEB

An informative review by Paul Gibney of Bateson's 'double bind hypothesis' 50 years on from when it was first proposed can be found at **http://www.psychodyssey.net/wp-content/uploads/2012/05/The-Double-Bind-Theory-Stlil-Crazy-Making.pdf**

Bateson *et al.* (1956) coined the phrase double bind to explain the contradictory situations children could be placed in by parents, where a verbal message is given but opposite behaviour is exhibited. For example, a parent may tell a child to 'be more spontaneous', but if the child is then spontaneous, it becomes confused and uncertain, as by doing what the parent said it is clearly not being spontaneous. This leads to a negative reaction of social withdrawal and flat effect (a lack of emotional expression) in order to escape double bind situations.

Another feature of the theory is that of expressed emotion, where families who persistently exhibit criticism and hostility exert a negative influence, especially upon people recovering from schizophrenia, who when returning to their families react to expressed emotion by relapsing to an active phase of the disorder and experience severe positive symptoms of hallucinations and delusions of persecution.

Research

Tienari *et al.* (2004) found that the level of schizophrenia in adopted individuals who were the biological children of schizophrenic mothers was 5.8 per cent in those adopted by healthy families compared with 36.8 per cent for children raised in dysfunctional families, which supports not only the family dysfunction theory but also the idea that individuals with high genetic vulnerability to schizophrenia are more affected by environmental stressors.

Patino *et al.* (2005) established seven problems associated with family dysfunction: poor relationship between adults in the household, lack of warmth between parents and child, visible disturbance of the mother–child, father–child or sibling–child relationship, parental overprotection and child abuse. They found that migrants who had experienced at least three of these seven problems had four times the normal level of vulnerability to developing schizophrenia, compared with the double level of risk for migrants not experiencing family dysfunction. This suggests that family dysfunction increases the likelihood of life stressors triggering the onset of schizophrenia.

Bateson (1956) reported on a case study where a patient recovering from schizophrenia was visited in hospital by his mother. He embraced her warmly, but she stiffened, and when he withdrew his arms she said, 'Don't you love me any more?' To which he blushed and she commented, 'Dear, you must not be so easily embarrassed and afraid of your feelings.' She then left and he assaulted an aide and had to be restrained. This gives support to the idea of double bind.

Kavanagh (1992) reviewed 26 studies of expressed emotion, finding that the mean relapse rate for people with schizophrenia who returned to live with high expressed emotion families was 48 per cent compared with 21 per cent for those who went to live with low expressed emotion families. This supports the idea that expressed emotion increases the risk of relapse for people recovering from schizophrenia. This was further supported by Butzlaff & Hooley (1998), who performed a meta-analysis of 26 studies to find that people with schizophrenia returning to a family environment of high expressed emotion experienced more than twice the average rate for the return of schizophrenic symptoms.

Evaluation

- Having a family member with schizophrenia can be problematic and stressful on family relationships. Therefore, rather than dysfunctions within families causing schizophrenia, it could be that having someone with schizophrenia within a family leads to dysfunctions.
- The family dysfunction theory is supported by the fact that therapies which successfully focus on reducing expressed emotions within families have low relapse rates compared with other therapies.
- Bateson's idea of double bind was initially popular among clinicians, but some have accused him of selective bias in focusing only on aspects of interviews with patients with schizophrenia that supported his claims. This, coupled with more recent evidence supporting a genetic link, has lessened support for the idea.
- A problem with the family dysfunction theory is that it fails to explain why all children in such families do not go on to develop schizophrenia.
- Although there is a lack of general support for family dysfunction as a causal factor of schizophrenia, research evidence into expressed emotion does suggest that family dysfunction plays a major role in maintenance of the disorder.

Cognitive theories

Cognitive explanations focus upon maladaptive thought processes as a central feature of schizophrenia, with Beck & Rector (2005) proposing a cognitive model that combines a complex interaction of neurobiological, environmental, behavioural and cognitive factors to explain the disorder. Abnormalities within brain functioning are seen as increasing vulnerability to stressful life experiences, which in turn lead to dysfunctional beliefs and behaviours. Cognitive deficits occur, where individuals with schizophrenia experience problems with attention, communication and information overload. Individuals are also seen as being unable to deal with inappropriate ideas, such as misperceiving voices in their head as people actually trying to speak to them, rather than perceiving them more sensibly as 'inner speech', which most people experience.

With positive symptoms, delusions are seen as occurring because of active cognitive biases (thinking in irrational ways), such as external attributions like individuals believing that they are being persecuted. Hallucinations, meanwhile, are understood in terms of biased information processing, while the cognitive deficits experienced by people with schizophrenia are referred to as alien control symptoms, where they believe that external people and forces are exerting influence over their thoughts and behaviour.

Negative symptoms are seen as occurring due to the use of cognitive strategies to control the high levels of mental stimulation being experienced. Patients with schizophrenia may actually experience a greater level of emotion than they physically display, as not expressing emotions is one strategy that can be used to try to control the levels of emotion being experienced internally.

KEY TERM

Cognitive explanations – the idea that the development of schizophrenia is related to maladaptive thought processes

Research

O'Carroll (2000) reviewed available evidence to report that cognitive impairment is found in 75 per cent of patients with schizophrenia, particularly in memory, attention, motor skills, executive function and intelligence, supporting Beck & Rector's cognitive model. Cognitive impairments often pre-dated illness onset, did not occur as a result of substance abuse and were related to social and functional impairments.

Elvevag & Goldberg (2000) reported that schizophrenia is better characterised by cognitive deficits rather than symptoms and that cognitive deficits are enduring features of schizophrenia that are not specific to sub-types of the disorder, with memory and attention being the main cognitive deficits forming the core dysfunction of the disorder. This provides support for the cognitive explanation of schizophrenia.

Knoblich *et al.* (2004) got people with and without schizophrenia to draw circles on a writing pad connected to a PC monitor and asked them to continuously monitor the relationship between their hand movements and the visual consequences. It was found that the patients with schizophrenia were impaired in their ability to detect a mismatch between self-generated movement and their consequences, which suggests that a cognitive inability to self-monitor may underlie the core symptoms of schizophrenia.

Bowie & Harvey (2006) reviewed evidence to find that cognitive impairments are the core feature of schizophrenia mainly affecting attention, working memory, verbal learning and executive functions. These impairments pre-date the onset of the disorder and are found throughout the course of the illness. This supports Beck & Rector's cognitive model, with additional support coming from the fact that effective therapies seem to reduce cognitive deficits.

Takahashi *et al.* (2013) compared electrical brain activity in 410 patients with schizophrenia and 247 people without schizophrenia exposed to auditory tones, to find that the ability to detect changes in tone was severely limited in the people with schizophrenia. This inability to detect changes in sounds may explain the cognitive deficits that individuals experience, such as not being able to direct attention properly, or rapidly encode new information, as changes in the tone of speech convey complex information concerning emotional meaning and content. It may also explain why they experience auditory hallucinations and delusions.

RESEARCH IN FOCUS

Takahashi *et al.* (2013) compared electrical brain activity in people with and without schizophrenia exposed to auditory tones, finding the ability to detect changes in tone was severely limited in the patients with schizophrenia. What type of experimental design was used in this laboratory experiment? Explain two strengths and two weaknesses of this type of experimental design. Why would it not be possible to use a different type of experimental design?

Evaluation

Cognitive theories in themselves do not explain what led to the cognitive dysfunctions seen in people with schizophrenia and thus cannot be seen as explaining the causes of schizophrenia.

If schizophrenia is better characterised by cognitive deficits that are not specific to sub-types of the disorder rather than its symptoms, it suggests that it may be possible to construct a specific cognitive deficit profile to better diagnose the disorder.

A strength of the cognitive explanation is that it can account for both positive and negative symptoms.

A further strength of the cognitive explanation is that it can be combined with other explanations, such as biological ones, to give a fuller understanding of the causes and maintenance of the disorder.

Dysfunctional thought processing

The idea of **dysfunctional thought processing**, where people with schizophrenia exhibit maladaptive ways of thinking, is an important part of the cognitive explanation of schizophrenia.

All humans use metacognition, the cognitive monitoring of one's own thought processes, which includes the ability to detect errors in cognitive processing, such as cognitive distortions. Metacognition also includes thinking about feelings and the behavioural reactions triggered by thoughts and feelings. Overall metacognition allows individuals to 'view' their own mental states and the wishes and intentions of others, allowing them to make sense of their lives and deal with their ever-changing environments. However, people with schizophrenia are seen as experiencing metacognitive dysfunction, resulting in them experiencing dysfunctional thought processes.

Dysfunctional thought processes are especially seen as affecting executive functioning, the higher-level cognitive processes that control and manage other cognitive and behavioural processes. Therefore dysfunctional thought processing in people with schizophrenia can lead to serious impairments in goal-directed behaviour, attention, memory, cognitive flexibility, self-monitoring, inhibition of inappropriate responses and physical motor control of the body.

KEY TERM

Dysfunctional thought processing – the idea that the development of schizophrenia is related to abnormal ways of thinking

Research

Joshua *et al.* (2009) used the Hayling Sentence Completion Test to compare 39 people with schizophrenia with 40 people with bipolar disorder and 44 healthy control participants, to find that the people with schizophrenia had slower response times and slower suppression of inappropriate responses, indicative of impaired executive functioning. This supports the idea that dysfunctional thought processing is an important factor in the development of schizophrenia.

Evans *et al.* (1997) gave the Behavioural Assessment of the Dysexecutive Syndrome test, as well as IQ and memory tests, to 31 patients with schizophrenia, 35 brain-injured patients and 26 healthy participants. It was found that the patients with schizophrenia and those with brain-damage had impaired executive functioning, with the patients with schizophrenia showing especial impairments in memory functioning, thus illustrating the role of dysfunctional thought processing in schizophrenia.

Betall *et al.* (1991) found that patients with schizophrenia struggled to identify words belonging to a certain category, such as birds, that they had read earlier, created themselves or had not seen before, supporting the idea that patients with schizophrenia have meta-representation problems.

Lysaker *et al.* (2008) used the Metacognition Awareness Test and the Delis Kaplan Executive Function System test to assess the metacognitive function of 49 male patients with schizophrenia. It was found that schizophrenic symptoms were linked to an inability to have awareness of one's thoughts and feelings and other people's needs, supporting the idea that metacognitive impairments are linked to the disorder.

RESEARCH IN FOCUS

Lysaker *et al.* (2008) used a correlational study to assess the metacognitive function of males with schizophrenia. Read the details of the study and then name the two co-variables in the study. Why could causality not be established in this type of study? In what way may the study lack external validity? If the data was of ordinal level what statistical test could be used to analyse the data? And if the data was of interval/ratio level?

Brune *et al.* (2011) reviewed 20 years of evidence to report that many symptoms of schizophrenia and the consequent impairments in social functioning result from poor metacognition, especially the ability to self-reflect and empathise with others, supporting the idea that metacognition dysfunction is an important part of schizophrenia.

Evaluation

The highlighting of metacognition as an important factor in the development of schizophrenia indicates that therapies for the disorder will need to concentrate on improving metacognitive abilities in patients in order to be effective. Indeed, therapies could be targeted at specific areas of metacognitive impairment.

Research suggests that dysfunctional thought processing in patients with schizophrenia occurs before the onset of the disorder and therefore is not an effect of being schizophrenic. Dysfunctional thought processing though is not necessarily a causative factor, but may instead itself be an effect of abnormal brain functioning, which in turn leads to dysfunctional thought processing.

Garety *et al.* (2001) believe that schizophrenia is best understood by linking different explanations, both biological and psychological, with cognitive explanations, such as dysfunctional thought processing, being the vital link in the chain.

Although dysfunctional thought processing seems linked to impairments in memory ability, research indicates that deficits occur only in specific areas of memory functioning, especially the central executive component of working memory and specifically tasks for which the visuospatial system is needed for central executive control. The phonological system seems to be less affected (see Chapter 2, 'Memory').

STRENGTHEN YOUR LEARNING

1. What types of dysfunctional characteristics are often shown by parents of people with schizophrenia?
2. Outline what is meant by i] *double bind*, ii] *expressed emotion* in relation to family dysfunction and schizophrenia.
3. Summarise what research evidence suggests about family dysfunction and schizophrenia.
4. What other evaluative points can be made about family dysfunction and schizophrenia?
5. Summarise the main features of Beck & Rector's (2005) cognitive model of schizophrenia.
6. To what extent does research evidence support Beck & Rector's model?
7. Explain how dysfunctional thought processing affects *metacognition* and *executive functioning* in people with schizophrenia.
8. What does research evidence suggest about dysfunctional thought processing and schizophrenia?
9. What other evaluative points can be made about dysfunctional thought processing and schizophrenia?

ASSESSMENT CHECK

1 Noel is a young man who has had several schizophrenic episodes. Every time he seems to be recovering, leaves hospital and returns to his family he relapses within a short period of time. His family members have trouble communicating with each other properly and are constantly arguing. Both his parents are very critical and controlling of their children.

Refer to the above scenario to explain the family dysfunction explanation of schizophrenia. **[4 marks]**

2 State one limitation of research into biological explanations for schizophrenia that uses non-human animals. **[2 marks]**

3 Select which one of the three following statements best explains the genetic explanation for schizophrenia: **[1 mark]**

- That abnormal levels of neurotransmitters are linked to the onset of the disorder.
- That abnormalities within specific brain areas are associated with the development of schizophrenia.
- That schizophrenia is passed on through family members by hereditary means.

4 Outline dysfunctional thought processing in schizophrenia. **[2 marks]**

5 Discuss the cognitive explanation for schizophrenia. **[16 marks]**

'Never go to a doctor whose office plants have died.'
Erma Bombeck (1979)

Therapies for the treatment of schizophrenia

Many therapies have been developed for treating schizophrenia over the years, with varying degrees of success. Therapies can be broadly divided into biological and psychological ones, though it is often possible to combine therapies to form more effective, long-lasting treatments.

'Drugs are not always necessary. Belief in recovery always is.'
Norman Cousins (1991)

11.4 Drug therapies

KEY TERMS

Drug therapy – chemical treatment of abnormality through tablets and intravenous means

Typical antipsychotics – the original neuroleptic drugs created in the 1950s to treat schizophrenia

Atypical antipsychotics – a class of neuroleptic drugs produced later, used to treat schizophrenia

The prime treatment for schizophrenia is the use of antipsychotic drugs, the first being chlorpromazine, introduced in 1952, which quickly had a major effect by enabling many people with schizophrenia to live relatively normal lives outside of mental institutions. Antipsychotics do not cure schizophrenia, but they dampen symptoms so that a degree of normal functioning can occur.

Antipsychotics can be taken in tablet form, as a syrup or by injection, and are divided into **typical antipsychotics** (first-generation) and **atypical antipsychotics** (second-generation) varieties. Atypical drugs were introduced as they were supposedly more effective than typical ones and incurred fewer side effects. However, there is much discussion as to how much these claims are true.

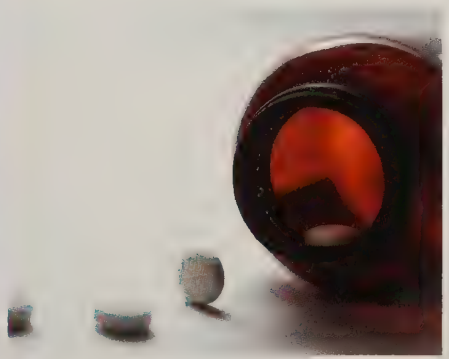


Figure 11.12 The main treatment for schizophrenia is the use of antipsychotic drugs

Symptoms such as hallucinations and feelings of agitation tend to reduce within a few days and delusions after a few weeks. After about six weeks many patients see a lot of improvement, though there are wide individual differences in levels of and types of response to taking antipsychotics. Patients often have to take several types before they find the best one for them. Some patients have to take a course of antipsychotics only once, while others have to take regular doses in order to prevent schizophrenic symptoms reappearing. There is also a sizeable minority of patients who do not respond to drug treatment. Antipsychotics can also be used as a combination therapy, where drugs are administered to reduce the symptoms of the disorder so that other psychological treatments, such as CBT (see page 495), can be more effective.

Typical antipsychotics, like chlorpromazine, work by arresting dopamine production through blocking the receptors in synapses that absorb dopamine, thus reducing positive symptoms of the disorder, such as auditory hallucinations and delusions. However, it is now thought that typical antipsychotics may also affect other neurotransmitter systems such as the cholinergic, alpha-adrenergic, histaminergic and serotonergic mechanisms. There are a number of side effects associated with the neurotransmitter systems that they affect, for instance their anti-cholinergic side effects include dry mouth, urinary problems, constipation and visual disturbance, while their effects on noradrenergic mechanisms lead to low blood pressure, problems with sexual function and nasal congestion.

Long-term use leads to 15 per cent of individuals with schizophrenia developing *tardive dyskinesia* (TD), which causes uncontrollable muscle movements, especially around the mouth. In some individuals this condition will become permanent.

Atypical antipsychotics introduced in the 1990s, such as clozapine, work by acting on serotonin as well as dopamine production systems, affecting negative symptoms of the disorder, such as reduced emotional expression. However, it is not known specifically how they relieve symptoms and although atypical drugs incur reduced levels of TD and have fewer side effects, there are some side effects specific to taking atypical antipsychotics, such as weight gain, neuroleptic malignant syndrome (a life-threatening neurological disorder whose symptoms include high fever, sweating, unstable blood pressure, stupor and muscular rigidity), increased risk of stroke, sudden cardiac death, blood clots and diabetes. Patients can also develop muscle tremors similar to those experienced by people with Parkinson's disease.

ON THE WEB

Listen to and watch Dr Colin Ross talk about treating schizophrenia with antipsychotic drugs, including typical and atypical versions, at **www.youtube.com**. Search for 'How do antipsychotic drugs work? How effective are medications for schizophrenia and psychosis?'.

CONTEMPORARY RESEARCH

A systematic review of atypical antipsychotic drugs in schizophrenia – Bagnall *et al.* (2003)

Figure 11.13 Are atypical drugs more effective and less harmful than typical ones?

Atypical antipsychotics were introduced with claims of being more effective and less harmful than the traditional typical antipsychotics. However, these claims have been disputed. In this meta-analysis, atypical antipsychotics were compared with typical antipsychotics, with drugs of both types being individually assessed, as well as both types being more broadly compared.

Aim

To compare the clinical effectiveness, safety and cost-effectiveness of typical and atypical antipsychotic drugs in the treatment of schizophrenia.

To assess the effectiveness of typical and atypical treatments against 'treatment-resistant' schizophrenia, as well as 'first-onset' schizophrenia.

Procedure

Data was compiled from 171 randomly controlled trials and 52 non-randomised trials of the effectiveness of drug treatments on schizophrenia.

Data was additionally compiled from 31 economic evaluations of antipsychotic drug treatments for schizophrenia.

Data was analysed by two independent researchers to establish inter-rater reliability.

Findings

Effectiveness. The atypical drugs risperidone, amisulpride, zotepine, olanzapine and clozapine were all more effective than typical drugs in reducing symptoms of schizophrenia. Quetiapine and sertindole were no more or less effective than typical antipsychotics in reducing overall symptoms of psychosis.

Clozapine was more effective than typical antipsychotic drugs in improving negative symptoms in treatment-resistant forms of schizophrenia. Zotepine also seemed to be more effective on negative symptoms.

No real differences were noted between typical and atypical antipsychotics in treating first-onset schizophrenia.

There was no difference in the effectiveness of atypical v. typical drugs for patients with concurrent substance abuse problems or co-morbid mental illnesses such as depression.

Dropout rates. Fewer patients taking atypical drugs left trials early than those from typical drugs groups, the exceptions

being those taking ziprasidone and zotepine, which suggests that patients generally found atypical antipsychotic drugs more acceptable.

Side effects. All atypical antipsychotic drugs caused fewer movement disorders than typical ones.

Olanzapine, amisulpride, sertindole and risperidone caused less drowsiness than typical drugs. Other atypical drugs were no more or less sedating than typical drugs.

With autonomic effects, clozapine and sertindole increased salivation, temperature and nasal congestion, while quetiapine increased incidence of dry mouth. Olanzapine had fewer autonomic effects than typical antipsychotics, but other atypical drugs had similar amounts of effects to typical drugs.

All atypical drugs had similar levels of inducing nausea and vomiting as typical drugs, except ziprasidone, which increased such effects, and olanzapine, which lessened them.

Amisulpride, risperidone and sertindole caused more weight gain than typical drugs, but ziprasidone, zotepine, clozapine and olanzapine did not.

Typical drugs and the atypical antipsychotics amisulpride, risperidone and sertindole were associated with infertility and impotence.

The atypical drugs sertindole and clozapine were associated with sudden cardiac death.

Cost effectiveness. Amisulpride was the most cost-effective atypical antipsychotic drug. Olanzapine was the cheapest atypical antipsychotic drug but may be less effective than the others, as side effects were not included in the assessment. Atypical drugs are more expensive than typical ones.

Conclusions

Atypical drugs generally seem more effective than typical drugs, though there are differences in effectiveness between individual drugs.

No one drug can be considered superior in terms of symptom reduction, side effects and cost-effectiveness.

All antipsychotics, typical and atypical varieties, have their criticisms. Different drugs suit different patients better, though this can be determined only by trial and error.

Evaluation

- In most trials, the effect of new atypical antipsychotic drugs on negative symptoms was not assessed, which is surprising given manufacturers' claims about their effectiveness in treating these symptoms.
- Sertindole was removed as a prescription drug in 1999 due to its association with death through cardiac failure.
- Evidence for the effectiveness of the newer atypical antipsychotic drugs compared with the older typical drugs was, in general, of poor quality, based on short-term trials and difficult to generalise to all people with schizophrenia.

Research

Davis *et al.* (1989) performed a meta-analysis of more than 100 studies that compared antipsychotics with placebos, finding drugs to be more effective, with over 70 per cent of patients treated with antipsychotics improving in condition after six weeks, while fewer than 25 per cent improved with placebos, suggesting that antipsychotics have a beneficial medical effect.

Marder (1996) reported that the atypical antipsychotic clozapine is as effective as typical antipsychotics in relieving the positive symptoms of schizophrenia, and is effective in approximately 30–61 per cent of patients who are resistant to typical antipsychotics, suggesting it to be a superior form of treatment.

Lieberman *et al.* (2005) examined the effectiveness of typical and atypical antipsychotics in treating 1,432 individuals with chronic schizophrenia, finding that 74 per cent of patients discontinued their treatment within 18 months due to intolerable side effects. Discontinuation rates and time to discontinuation were similar between typical and atypical antipsychotics, though for different reasons, with discontinuation of atypical drugs being more associated with muscular disorders, and discontinuation from atypical drugs more associated with weight gain and metabolic effects.

Schooler *et al.* (2005), comparing the effectiveness of typical and atypical antipsychotics, found both effective in treating schizophrenia, with 75 per cent of patients experiencing at least a 20 per cent reduction in symptoms. However, 55 per cent of those receiving typical antipsychotics suffered relapses, compared with only 42 per cent for atypical treatment, with relapses occurring earlier in those taking typical drug treatments. Side

effects were fewer with atypical antipsychotics. This implies that atypical drugs are superior.

Kahn *et al.* (2008) compared typical with atypical antipsychotics in their effectiveness of treating first-instance schizophrenia, finding that antipsychotics were effective for at least one year but that atypical drugs were not necessarily any more effective than typical ones, casting doubt on the idea that atypical drugs are superior. This was further supported by Stargardt *et al.* (2008), who used data from 3,121 patients to compare atypical and typical drugs in terms of effectiveness, finding no difference between the two drug types in terms of relapse rates, though atypical drugs were superior in treating more severe cases. This suggests that the higher costs for atypical antipsychotics were not justified in terms of them being generally more effective, again casting doubts on the claims of atypical drugs being superior.

Evaluation

Antipsychotics are effective, as they are relatively cheap to produce, easy to administer and have positive effects on many patients, allowing them to live relatively normal lives outside of mental institutions. Less than 3 per cent of people with schizophrenia in the UK live permanently in hospital.

One problem with antipsychotics is the high relapse rate – around 40 per cent in the first year after treatment and 15 per cent in later years – generally due to patients stopping treatment because of side effects and the reduced quality of life they can bring.

Typical antipsychotics incur side effects, such as muscle tremors. Atypical antipsychotics were introduced to reduce such problems, which they do, but they incur serious side effects of their own, some of which are fatal, such as sudden cardiac death.

Although antipsychotics produce relatively minor side effects for most patients, for instance constipation and weight gain, some individuals incur serious neurological symptoms that can lead to coma and death.

There are many within the psychiatric community who see the widespread use of antipsychotics as being fuelled by the powerful influence of the drug-producing companies, which stand to make enormous profits from their use, especially the replacement of typical with atypical drugs, which bring even bigger profits (see Psychology in the real world, page 494).

RESEARCH IN FOCUS

When testing antipsychotic drugs researchers tend to give half the participants a drug and the other half a **placebo** (a harmless sugar pill). A **double-blind technique** is also usually used, where participants and researchers do not know who is receiving the drug or the placebo.

What is the purpose of using a placebo and a double-blind technique in studies like these?

PSYCHOLOGY IN THE REAL WORLD

Schizophrenia is a seriously debilitating mental disorder. However, serious questions exist over the use of drug therapies.

Typical antipsychotics had a major effect in allowing many patients to live relatively normal lives outside of mental institutions, but incurred serious side effects. When drug companies introduced atypical antipsychotics with claims of greater effectiveness and fewer side effects, the future looked good. But then came accusations that drug companies were more motivated by money than patient welfare.

In 2011, 3.1 million Americans were prescribed antipsychotics, generating $18.2 billion (£11.6 billion) in profits. Prescriptions for atypical antipsychotics increased by 93 per cent between 2001 and 2011, though the rate of incidence of schizophrenia and depression for which they are given remained the same. Atypical antipsychotics cost about £75 per prescription compared with only £17 for typical varieties and research has not really backed up claims that they are more effective. Although they reduce side effects associated with typical drugs, they incur serious side-effect risks of their own, which drug companies were not keen to admit to. The Johnson & Johnson pharmaceutical company was fined $2.2 billion (£1.4 billion) in the USA after allegations of 'purposely withholding findings' about antipsychotics it sold increasing risk of strokes, diabetes and being associated with breast growth in males. Accusations have also been made about research into such drugs being largely controlled by drug companies that influence which findings are published.

Drug companies are also accused of marketing new 'improved' drugs only when their patents for older drugs run out. But are such drugs improvements? Invega was approved in 2007 as an improvement on Risperdal, the drug of which it is a metabolite, but research suggests it is no more effective, even though it is costly. When patents run out, other companies can introduce cheaper generic drugs, severely eating into drug companies' profits.

And what of other drugs? Pedersen (2012) found cannabidol, an active ingredient in marijuana (which does not contain THC, an ingredient of cannabis associated with triggering schizophrenia), worked just as effectively as antipsychotics, but with far fewer side effects. However, the suspicion is that as it is much cheaper to produce it would not generate great profits, so the drug companies will not be overly keen to produce it.

Figure 11.14 Pedersen argues that cannabidol might be a better treatment than antipsychotics for schizophrenia

STRENGTHEN YOUR LEARNING

1. Antipsychotic drugs do not cure schizophrenia. Explain what their actual role is in the treatment of the disorder.
2. Outline possible side effects of i) typical antipsychotics, ii) atypical antipsychotics.
3. Outline and evaluate Bagnall *et al*'s. (2003) meta-analysis of antipsychotic drugs.
4. Summarise what research evidence suggests about the use of antipsychotic drugs to treat schizophrenia.
5. What other evaluative points can be made about treatment with antipsychotics?

11.5 Cognitive behavioural therapy, family therapy and token economies

Cognitive behavioural therapy (CBT) is the main psychological treatment used with schizophrenia. The idea is that beliefs, expectations and cognitive assessments of self, the environment and the nature of personal problems affect how individuals perceive themselves and others, how problems are approached, and how successful people are in coping and reaching goals. CBT thus aims to help patients by changing the maladaptive thinking and distorted perceptions seen as underpinning the disorder in order to modify hallucinations and delusional beliefs.

Antipsychotics drugs are usually given first to reduce psychotic thought processes, so that CBT can be more effective. CBT is then undertaken around once every 10 days, for about 12 sessions, to identify and alter irrational thinking. Drawings are often used to display links between patients' thoughts, actions and emotions. Understanding where symptoms originate from can be useful in reducing patients' anxiety levels.

One CBT approach is personal therapy (PT), involving detailed evaluation of problems and experiences, their triggers and consequences, and strategies being used to cope. Cognitive techniques are developed between patient and therapist, such as:

- distractions from intrusive thoughts
- challenging the meanings of intrusive thoughts
- increasing/decreasing social activity to distract from low moods
- using relaxation strategies.

PT is also used to tackle problems faced by patients with schizophrenia discharged from hospital, taking place in small groups or as a one-to-one therapy. Patients are taught to recognise small signs of relapse, which can build up to produce cognitive distortions and unsuitable social behaviour.

Rational emotive therapy is also used to teach patients that emotional instability is a common feature of schizophrenia that they must live with. Patients use muscle relaxation techniques to detect gradual anger build-ups and then apply relaxation skills to control emotions.

Research

Tarrier *et al.* (2000) found that people with schizophrenia receiving 20 sessions of PT in 10 weeks, coupled with drug therapy, followed by four booster sessions during the next year, did better than patients receiving drug therapy alone or supportive counselling. One third of patients receiving PT achieved a 50 per cent reduction in psychotic experiences, with 15 per cent free of all positive symptoms, compared with 15 per cent in the counselling group, with 7 per cent free of all positive symptoms. No patients in the drugs-only group were symptom-free. One year later, similar differences still existed, but at a two-year follow-up the PT group's advantage over the counselling group had vanished, though both groups still outscored the drugs-only group.

KEY TERM

Cognitive behavioural therapy – treatment of abnormality that modifies thought patterns to alter behavioural and emotional states

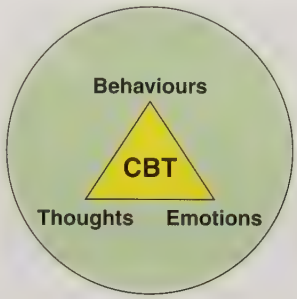


Figure 11.15 Cognitive behavioural therapy is a common psychological treatment of schizophrenia, but how effective is it?

McGorry *et al.* (2002) found that after six months of treatment 36 per cent of individuals with a high risk of first-onset schizophrenia who received supportive psychotherapy had developed schizophrenia, compared with only 10 per cent who received drugs and CBT. This suggests CBT is more effective than psychotherapy in preventing first-onset schizophrenia.

Tarrier (2005) reviewed 20 controlled trials of CBT using 739 patients, finding persistent evidence of reduced symptoms, especially positive ones, lower relapse rates and a speedier recovery rate of acutely ill patients. These were short-term benefits, however, with follow-ups needed to assess CBT's long-term benefits.

Zimmerman *et al.* (2005) performed a meta-analysis of 14 studies of CBT published between 1990 and 2004 involving 1,484 patients, and found CBT significantly reduced positive symptoms and that the treatment was especially beneficial to those suffering a short-term acute schizophrenic episode. This implies that CBT is more appropriate when treating certain aspects of the disorder.

Jauhar *et al.* (2014) performed a meta-analysis of 50 studies of CBT for schizophrenia conducted over the last 20 years, finding only a small therapeutic effect on symptoms, including positive symptoms, such as delusions and hallucinations, which CBT mainly targets. Even this small effect disappeared when only studies using blind testing (where researchers are not aware which patients have received CBT) were considered. This strongly questions whether CBT should be used as a treatment for schizophrenia.

Evaluation

- Evidence suggests that CBT plus antipsychotics is effective in treating schizophrenia and more effective than drugs or CBT alone, supporting the case for combined treatments.
- For CBT to be effective, training of CBT practitioners is essential, successful treatment being dependent on developing empathy, respect, unconditional positive regard and honesty between patient and practitioner. This was supported by Rathod *et al.* (2005) finding that non-Afro-Caribbean therapists had less success using CBT with Afro-Caribbean than white ethnic patients, as empathy between such clinicians and patients was harder to establish.
- CBT is not suitable for all patients, especially those too disorientated, agitated or paranoid to form trusting alliances with practitioners. It may be more suitable for those refusing drug treatments, though for some of these patients it may be difficult to effectively undertake CBT.
- Blind testing, where the investigators who make the assessments do not know which group of patients received the therapy, is routinely used in trials of medical treatment but has not always been employed in studies of CBT for schizophrenia, making assessment of the treatment difficult.
- CBT has fewer side effects than antipsychotic drugs but is a more expensive treatment, with cost a key factor at a time of reduced health-care budgets.
- Trower *et al.* (2004) reported that CBT did not actually reduce the intensity of hallucinations but made them seem less of a threat by persuading people with schizophrenia that they 'outranked' the voices in their heads. This suggests that rather than treating the symptoms of schizophrenia, CBT teaches patients strategies for dealing with them.

'When the "I" in illness is replaced with "we" it becomes wellness.'

Anonymous

Family therapy

Family therapy (also known as family-focused therapy) is a form of psychotherapy based on the idea that as family dysfunction (see page 483) can play a role in the development of schizophrenia, altering relationship and communication patterns within dysfunctional families, and especially lowering levels of expressed emotion, should help people with schizophrenia to recover. Therefore the treatment involves the whole family, not just the member with schizophrenia, with the family becoming the patient's support network.

KEY TERM

Family therapy – treatment of schizophrenia by alteration of communication systems within families

The main aims of family therapy are:

1 Improve positive and decrease negative forms of communication.
2 Increase tolerance levels and decrease criticism levels between family members.
3 Decrease feelings of guilt and responsibility for causing the illness among family members.

Figure 11.16 Family therapy aims to alter relationship and communication patterns to treat schizophrenia within dysfunctional families

Therapists meet regularly with the patient and family members, who are encouraged to talk openly about the patient's symptoms, behaviour and progress with their treatment and how the patient's illness affects them. Family members are also taught to support each other and be caregivers, with each person given a specific role in the rehabilitation of the patient. There is an overall emphasis on 'openness', with no details remaining confidential, though boundaries of what is and is not acceptable are drawn up in advance, as part of a document of informed consent.

Family therapy, similarly to CBT, is given for a set amount of time, usually between nine months and a year, with a focus on reducing symptoms and allowing family members to develop skills that can be continued after the therapy has ended.

Research into family therapy

Leff *et al.* (1985) compared family therapy with routine outpatient care for patients with schizophrenia from families high in expressed emotion, finding in the first nine months of treatment 50 per cent of those receiving routine care relapsed, compared with 8 per cent of those receiving family therapy. This rose after two years to 75 per cent relapsing who received routine care compared with 50 per cent for the family therapy patients. This suggests family therapy is a comparatively effective theory, especially in the short term.

Xiong *et al.* (1994) randomly allocated 63 Chinese patients with schizophrenia to either standard drug care or standard drug care plus family therapy, finding that after one year 61 per cent of the standard care patients had relapsed (36 per cent being rehospitalised) compared with 33 per cent of the standard care plus family therapy patients (12 per cent of whom were rehospitalised). This suggests family therapy forms an effective combined treatment when twinned with antipsychotics.

Pilling *et al.* (2002) performed a meta-analysis of several forms of psychological treatment for schizophrenia, including 18 studies of family therapy with 1,467 patients, finding family therapy had the smallest number of patients who

relapsed and the lowest number of hospital readmissions, as well as the highest number of patients who complied with their medication regime, though CBT had the best success rate with treatment-resistant forms of schizophrenia. This suggests family therapy is effective, especially for those in contact with their families.

McFarlane *et al.* (2003) reviewed available evidence to find that family therapy results in reduced relapse rates, symptom reduction in patients and improved relationships among family members, which leads to increased well-being for patients. This suggests that family therapy is an effective treatment, with an indication that better family relationships are the key element.

Evaluation

- With the emphasis on 'openness' there can be an issue with family members being reluctant to share sensitive information, as it may cause or reopen family tensions. Some family members may also be reluctant to talk about, or even admit, their problems, lowering the effectiveness of the treatment.
- Family therapy can be useful for patients who lack insight into their illness or cannot speak coherently about it, as family members may be able to assist here. Family members have lots of useful information and insight into a patient's behaviour and moods and are often able to speak for them.
- As well as decreasing relapse rates and lowering the need for hospitalisation, family therapy can educate family members to help manage a patient's medication regime, decreasing the need for clinicians to do this, thus making the treatment more cost effective.
- Younger patients who still live at home with their families especially may be in a position to benefit from family therapy.
- Although a combination of drug and family therapy treatments is desirable, due to cost restraints it is often not possible to offer patients such treatments.
- The Schizophrenia Commission (2012) estimates that family therapy is cheaper than standard care by £1,004 a patient over three years, suggesting it is a relatively cost-effective treatment.

YOU ARE THE RESEARCHER

Design a study to compare the relative effectiveness of CBT and family therapy. What kind of study would this be? What criteria would you assess these therapies on and how would you measure them?

How would participants be assigned to conditions and what steps could be taken to ensure researcher bias does not occur? Create an appropriate table and graph to plot your results and state what statistical test would be used to analyse the data. Give three reasons for your choice of test.

Token economies

Token economies are a behaviourist therapeutic approach to the management of schizophrenia, where tokens are awarded for demonstrations of desired behavioural change. Introduced in the 1970s the technique is mainly used with long-term hospitalised patients to enable them to leave hospital and live relatively independently within the community. Token economies are particularly aimed at changing negative symptoms of schizophrenia, such as low motivation, poor attention and social withdrawal.

The technique uses operant conditioning principles, where patients receive reinforcements in the form of tokens immediately after producing a desired behaviour. The tokens can then later be exchanged for goods or privileges. Desired behaviours can be things like examples of self-care, adherence to medication regime and social interaction.

Research

Ayllon & Azrin (1968) found token economies a successful technique when used with female schizophrenic patients hospitalised for an average of 16 years. Rewarded with tokens that could be exchanged for viewing a film or visiting the canteen for behaviours such as brushing their hair and making their beds, the average number of daily chores completed rose from 5 to 42, illustrating the success of token economy in getting patients to take more responsibility for themselves.

McMonagle & Sultana (2000) conducted a meta-analysis of token economy programmes involving 110 patients with schizophrenia, finding slight evidence for improved mental state, especially with negative symptoms. This gives a degree of support to the treatment.

Dickerson *et al.* (2005) reviewed 13 studies of token economy, finding the technique generally useful in increasing the adaptive behaviour of patients, which implies it to be an effective treatment. Token economy worked best in combination with psychosocial and drug therapies, though the specific benefits of the technique when used as a combination treatment were not identified, suggesting an area for future research.

Silverstein *et al.* (2009) found that patients with schizophrenia living in the community often have trouble performing jobs where they are paid on a long-term basis, such as monthly, as they have difficulty engaging in events to obtain distant rewards, but engage quite readily in situations using token economies where they are rewarded hourly or daily. This suggests that people with schizophrenia need to be paid on a more short-term basis when in employment.

Evaluation

- Token economies work best in unison with antipsychotic drugs and other personalised psychotherapeutic treatments. This should therefore not be seen as a treatment for schizophrenia in itself.
- A negative effect of long-term hospitalisation for patients with schizophrenia is institutionalisation, where patients lack motivation and become apathetic. So one unforeseen advantage of token economies is patients becoming more independent and active, which has the knock-on effect of nurses' increased regard for the patients,

KEY TERM

Token economies as used in the management of schizophrenia – a method of behaviour modification used with schizophrenic patients that reinforces target behaviours by awarding tokens that can be exchanged for material goods

Figure 11.17 Token economies involve earning tokens for demonstrating desired behaviours, which can later be exchanged for goods or privileges

leading to the patients becoming even more motivated and developing positive self-regard.

Another unforeseen advantage of token economies is that their use facilitates a safer and more stable therapeutic environment. Staff and patient injuries reduce, thus decreasing staff absenteeism and emergency incident levels.

The problem with token economies is desirable behaviour becomes dependent on being reinforced; upon release in the community, reinforcements cease, leading to high re-admittance rates.

A strength of token economies is that they can be tailored to meet the individual requirements of different patients, as the technique uses the same principles but to target different behaviours. This means that the technique has flexibility, allowing it to be used in a variety of settings.

Token economies are not favoured by all clinicians, due to perceptions that participation in them is humiliating and that their benefits do not generalise to real-life settings.

STRENGTHEN YOUR LEARNING

1. Explain how i] *personal therapy*, ii] *rational emotive therapy* are used to treat schizophrenia.
2. What does research evidence suggest about the effectiveness of CBT as a treatment for schizophrenia?
3. What other evaluative points can be made about CBT as a treatment for schizophrenia?
4. For family therapy, state i] its main aims, ii] how it is applied.
5. What does research evidence suggest about the effectiveness of family therapy as a treatment for schizophrenia?
6. What other evaluative points can be made about family therapy as a treatment for schizophrenia?
7. What are the main aims of token economies in managing schizophrenia?
8. Use research evidence and other evaluative points to summarise the strengths and weaknesses of token economies in the management of schizophrenia.

11.6 The importance of the interactionist approach in explaining and treating schizophrenia

Interactionist explanations

There are many explanations and treatments for schizophrenia, both biological and psychological, but rather than trying to assess which is the 'correct' explanation and which is the 'best' treatment, it is probably better to perceive

schizophrenia as developing through several interacting factors, and to view combinations of different therapies as the best form of treatment.

The **interactionist approach** encompasses the **diathesis-stress model**, where schizophrenia is perceived as resulting from a combination of biological and environmental factors. A schizophrenic episode is seen as being triggered or worsened when environmental stressors (stress) combine with a biological diathesis (vulnerability).

As previously outlined, research indicates schizophrenia has a biological component, with several genes identified that seem to increase vulnerability to developing the disorder (see genetic explanation, page 477). It also seems likely that genetic factors are linked to faulty dopaminergic systems in those with schizophrenia and to abnormal functioning of other neurotransmitters in patients with schizophrenia. However, genes on their own do not cause the disorder, but instead increase the likelihood that environmental stressors can trigger off a schizophrenic episode. Interestingly, research seems to indicate that neural correlates of schizophrenia are an effect of being schizophrenic, rather than being due to genetic influences (see Boos *et al.* (2012), page 480).

Psychological triggers for schizophrenia can be such things as family dysfunction, substance abuse, critical life events, etc. and those most genetically at risk of developing the disorder will be most vulnerable to such triggers. Cognitive deficits and dysfunctional thought processing are again seen as being effects of schizophrenia rather than being causes or triggers of the disorder.

KEY TERMS

Interactionist approach – the idea that schizophrenia results from a combination of psychological, biological and social factors

Diathesis-stress model – the idea that individuals have varying genetic potentials for schizophrenia that combine with the degree of environmental stressors in their lives to form their actual amount of vulnerability to the disorder

Research

Walker (1997) reported that patients with schizophrenia have higher levels of cortisol than people without schizophrenia and that cortisol levels are related to severity of symptoms, with stress-related increases in cortisol levels heightening genetic-influenced abnormalities in dopamine transmission that underpin vulnerability to schizophrenia, triggering the onset of the disorder. This illustrates the interaction of biological and environmental factors in the development of schizophrenia in line with the diathesis-stress model.

Murray (1996) reported that children who were born after flu epidemics where their mothers had contracted the disease while pregnant, especially in the second trimester (pregnancy months 4–6), had an 88 per cent increased chance of developing schizophrenia than children born in the same time period whose mothers had not contracted flu. Exposure to flu during the second trimester is suspected of causing defects in neural development, which leads to increased vulnerability to schizophrenia due to brain damage, which has a knock-on effect on dopamine functioning. This again illustrates how schizophrenia could result from an interaction of factors.

Cannon *et al.* (2002) reviewed available evidence, to find a positive correlation between birth complications and a later vulnerability to developing schizophrenia, with some indication of damage to hormone and neurotransmitter systems, as well as the immune system. This again supports an interactionist explanation of schizophrenia, where biological vulnerabilities interact with later stressors to trigger the disorder.

Barlow & Durand (2009) reported that a family history of schizophrenia, indicating a genetic link, coupled with being part of a dysfunctional stressor elevated the risk of developing schizophrenia, supporting the diathesis-stress model, with the diathesis being the genetic tendency and the stress being the dysfunctional family.

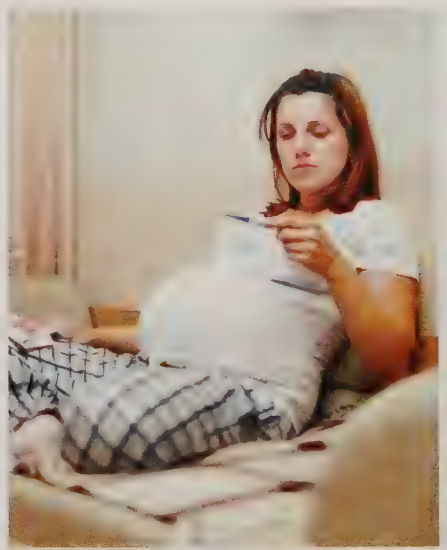


Figure 11.18 The flu theory of schizophrenia perceives the disorder as occurring due to an interaction of biological and environmental factors

Evaluation

To counter the criticism that elevated cortisol levels may be an effect rather than a precipitating factor of schizophrenia, Walker (1997) reports that cortisol levels are higher immediately before onset of schizophrenia rather than during recovery, which suggests elevated cortisol levels trigger schizophrenia rather than being a consequence of it.

Stressors that may contribute to a risk of developing schizophrenia include biological, environmental, psychological and social factors. However, it is not known precisely how these risks contribute to the diathesis-stress interaction for any one person because specific causes for schizophrenia may differ between individuals.

The differential susceptibility hypothesis extends the diathesis-stress model to include positive as well as negative environments. An individual person may have a biological vulnerability that combined with a stressor leads to schizophrenia. However, the same individual if exposed to a positive environment, such as a loving family background, could have better outcomes that reduce the chances of them becoming schizophrenic.

Genes cannot determine outcomes on their own; they need a particular environment in which to express themselves. Therefore genes that predispose someone to have increased vulnerability to schizophrenia cannot on their own cause the disorder; instead they need particular stressors to be present to trigger the potential of the genes to bring about the disorder, in line with the diathesis-stress model.

RESEARCH IN FOCUS

Explain how research which produces therapies and treatments for schizophrenia can have implications for the economy. Select two specific research studies of therapies and treatments for schizophrenia and explain the aspects of them that suggest positive implications for the economy.

Interactionist treatments

Researchers assess the relative efficiency of different treatments for schizophrenia by comparing treatments. Although effectiveness of treatments is dependent upon factors such as cost, relapse rates, degree of side effects, etc., as well as symptom reduction, it is noticeable that research indicates combination treatments, where more than one treatment is administered simultaneously to patients, are generally most effective. Which particular combination of treatments is best though is affected by each patient's individual circumstances and needs – for example, family therapy will only really suit people with schizophrenia who have problems with dysfunctional family relationships and who have a great deal of contact and interaction with their families. Generally, treatment with antipsychotics is given first to reduce symptoms, so that psychological treatments will then have greater effect, though antipsychotics will generally still be given while these treatments are administered.

Research

Hogarty *et al.* (1986) assessed relapse rates in 103 patients with schizophrenia from high expressed emotion families receiving various treatments, finding first-year relapse rates of 19 per cent for family therapy plus drugs, 20 per cent for social support therapy plus drugs, 41 per cent for drug treatment alone and 0 per cent for family therapy, plus social support and drug therapies. This supports the idea of combining treatments to increase their effectiveness. However, a follow-up study suggested the combined treatment only delayed relapse rather than prevented it.

Guo *et al.* (2010) reported that patients in the early stages of schizophrenia who receive a combination of antipsychotics and a psychological therapy have improved insight, quality of life and social functioning and are therefore less likely to discontinue treatment or relapse than those taking antipsychotics alone, illustrating the value of a combined treatment.

Sudak (2011) reports that antipsychotic drug medication combined with CBT strengthens adherence to drug treatment, as the CBT gives the patient rational insight into the benefits of adhering to their drug treatment, increasing their chances of improvement. This again illustrates a benefit of combining treatments.

Morrison & Turkington (2014) reported that drug treatment plus CBT produced better rates of symptom reduction and relapse than drug treatment or CBT alone, demonstrating the effectiveness of an interaction of treatments.

Evaluation

- A combination of behavioural and cognitive therapies is often effective as cognitive therapies address disordered thinking, allowing behavioural therapies to then be effective in teaching functional social skills and when to apply them in real-life situations. Without the cognitive restructuring patients are too disordered for behavioural therapies to be of any use.
- Although combining therapies increases the cost of treatment, the greater effectiveness of treatment can make combination therapies more cost effective in the long term.
- As schizophrenia often has both biological and psychological components, combined treatments are often desirable, where biological treatments such as drugs address the biological elements and psychotherapeutic treatments address the psychological elements.
- Combination treatments can have a downside, too – patients receiving CBT sometimes interpret the side effects of simultaneous drug treatment in a delusional manner, increasing their mistrust and resistance to further treatment.

STRENGTHEN YOUR LEARNING

1. Outline how the *diathesis-stress model* explains the development of schizophrenia.
2. Summarise what research evidence suggests about an interactionist approach (including the diathesis-stress model) to explaining schizophrenia.
3. What other evaluative points can be made about an interactionist approach to explaining schizophrenia?
4. To what extent does research evidence suggest that combination treatments for schizophrenia are effective?
5. What other evaluative points can be made about the use of combination treatments?

ASSESSMENT CHECK

1 One problem when conducting research to assess the effectiveness of antipsychotic drugs is that of demand characteristics.

a) Explain what is meant by demand characteristics. **[2 marks]**

b) Outline how a single blind procedure can be used to reduce the risk of demand characteristics. **[2 marks]**

2 Sally's schizophrenia has been so severe that she has been hospitalised for a considerable time and there have been problems in getting Sally to interact with staff and other patients and to take her medication regularly. She also does little to take care of herself, has low motivation and cannot pay attention to anything for very long.

With reference to the scenario above, explain how the technique of token economy could be used to improve Sally's behaviour. **[4 marks]**

3 In the statements below referring to treatments for schizophrenia, place a letter 'C' next to the statement that relates to cognitive behavioural therapy and a letter 'F' next to the statement that relates to family therapy. There will be one statement left over. **[2 marks]**

- A therapy that acts upon serotonin as well as dopamine production systems to reduce negative symptoms of the disorder ☐
- A therapy that changes maladaptive thinking and distorted perceptions in order to modify hallucinations and delusional beliefs ☐
- A therapy that improves positive and negative forms of communication and reduces levels of expressed emotion ☐

4 Explain one difference between typical and atypical antipsychotic drugs for the treatment of schizophrenia. **[2 marks]**

5 Discuss the importance of an interactionist approach in explaining and treating schizophrenia. **[16 marks]**

SUMMARY

The classification of schizophrenia

- Schizophrenia is classified in terms of its symptoms, both positive ones, such as hallucinations and delusions, and negative ones, such as speech poverty and avolition.
- Schizophrenia is diagnosed in terms of its symptoms by reference to classification systems such as ICD-10 and DSM-5.
- Reliability of diagnosis concerns whether symptoms are measured in a consistent way, while validity of diagnosis concerns whether symptoms are measured in an accurate way.
- Co-morbidity involves additional disorders or diseases simultaneously occurring with schizophrenia.
- Culture bias concerns the tendency to over-diagnose members of other cultures as suffering from schizophrenia and to hospitalise them more readily.
- Gender bias concerns the tendency for schizophrenic diagnostic criteria to be applied differently to males and females and for there to be gender differences in the classification of the disorder.

Biological explanations of schizophrenia

- Biological explanations include the genetic explanation, which stresses the heritability of the disorder, the dopamine hypothesis, which sees the development of schizophrenia as related to abnormal levels of dopamine, and neural correlates, which sees the development of schizophrenia as related to structural and functional brain abnormalities.

Psychological explanations of schizophrenia

- Psychological explanations include family dysfunction, which sees dysfunctional family relationships and patterns of communication as related to the development of schizophrenia, and cognitive explanations, which see the development of schizophrenia as related to maladaptive thought processes, including dysfunctional thought processing, which sees the development of schizophrenia as related to abnormal ways of thinking.

Drug therapies

- Drug therapies include the typical first-generation antipsychotics and atypical second-generation antipsychotics.

Cognitive behavioural therapy, family therapy and token economies

- Cognitive behavioural therapy treats schizophrenia by attempting to modify thought patterns in order to alter behavioural and emotional states.
- Family therapy treats schizophrenia by attempting to alter communication systems within families.
- Token economies attempt to modify the behaviour of patients with schizophrenia by reinforcing target behaviours through awarding tokens exchangeable for material goods or rewards.

The interactionist approach in explaining and treating schizophrenia

- The interactionist approach to explaining schizophrenia sees schizophrenia as resulting from a combination of psychological, biological and social factors and as best handled by combining treatments.
- The diathesis-stress model sees biological tendencies to be schizophrenic combining with environmental triggers to determine an individual's level of vulnerability to the disorder.

12 Stress

Introduction

Stress is a general response to demands made upon the body. Stress occurs when there is a lack of balance between the perceived needs of a situation and the perceived abilities of an individual to cope with those needs, for example not feeling able to meet the demands of your psychology examination.

Although stress has behavioural and cognitive components, stress responses are mainly physiological (bodily) ones. Stressors are the sources of stress (things that cause stress). If an individual is stressed due to owing money, stress is what the individual feels, while the stressor is owing money.

Specific focus will be upon:

1 The physiology of stress
2 The role of stress in illness
3 Sources of stress
4 Physiological measures of stress
5 Individual differences in stress
6 Managing and coping with stress.

Understanding the specification

- When studying the physiology of stress the general adaptation syndrome, the hypothalamic-pituitary-adrenal system and the sympathomedullary pathway as well as the role of cortisol must be included, as they are explicitly listed on the specification.
- The specification requires that the study of the role of stress in illness should include immunosuppression and cardiovascular disorders, as again these are specifically listed.
- Sources of stress require focus on three areas: life changes, daily hassles and workplace stress (including the effects of workload and control).
- When studying measurements of stress, the Social Readjustment Ratings Scale, Hassles and Uplifts Scale and skin conductance response should be included, as they are explicitly listed in the specification.
- The study of individual differences in stress requires focus on personality types A, B, C and associated behaviours, as well as hardiness, including commitment, challenge and control.
- The specification's final focus is on managing and coping with stress, with a requirement to concentrate on i] the drug therapies of benzodiazepine and beta-blockers, as well as stress inoculation therapy and biofeedback, ii] gender differences in coping with stress, and iii] types of social support, including instrumental, emotional and esteem support.

These are the basic requirements of the specification. However, other relevant material is included to provide depth and detail to your understanding.

'A crust eaten in peace is better than a banquet partaken in anxiety.'
Aesop (540 BC)

IN THE NEWS

Ψ The Psychological Enquirer

Visitors to Cebu City Zoo in the Philippines are being offered snake massages to ease away stress after a hard day's sightseeing. The therapy involves lying down on a bamboo bed and being covered in four six-and-a-half-feet-long non-poisonous Burmese pythons weighing a combined total of 550lb (see Figure 12.1). A session lasts 10-15 minutes, with the slithering motion of the snakes said to be therapeutic and calming. The large snakes, which feed by crushing their prey and then swallowing them whole, are fed ten or more chickens each before every massage just to be on the safe side.

When individuals are stressed the neck, shoulders and lower back are especially tense. Snakes are not as efficient as a trained masseur who can apply specific pressures to targeted areas, but the large, heavy snakes provide a deep massaging effect as they crawl around a human body easing the muscular effects of stress.

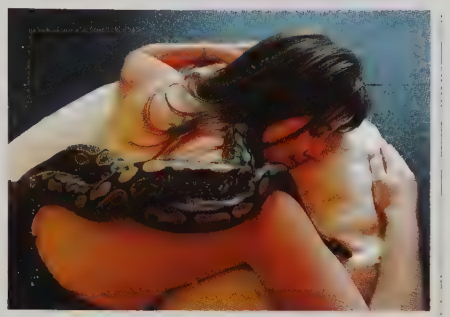


Figure 12.1 Snake massage is one of the more unusual forms of stress management

Psychological research into stress helps form types of stress management, both biological, like drug therapies, and psychological, like hardiness training. Snake massage has a physical and psychological calming effect, but is probably not a therapy most people would wish to try.

'The human body is robust. It gathers strength when it's in mortal danger.'
Toni Morrison (2004)

12.1 The physiology of stress

Stressors can either be *acute* (short-term), for instance being confronted by a snarling dog, or *chronic* (long-term), such as pressures at work. Both types affect the body, though in different ways. The effects of **stress** upon the body have been explained initially by the **general adaptation syndrome** and later by the hypothalamic-pituitary-adrenal system and the sympathomedullary pathway. The hormone **cortisol** plays a vital role, especially with chronic stress.

General adaptation syndrome

Selye (1936)

The *general adaptation syndrome* (GAS) describes the physiological reactions that occur in response to stress. There are three stages to GAS:

1 **Alarm reaction** – involves physiological changes associated with emotional reactions to stressors. The hypothalamus signals the sympathetic nervous system, which activates and stimulates the adrenal medulla to secrete adrenaline and noradrenaline, which help increase heart rate, blood flow and blood-sugar levels (this is commonly known as the fight-or-flight response).

ON THE WEB

To watch a video presentation of people being snake massaged at Cebu Zoo, go to **www.youtube.com** and search for 'Snake (pythons) massage comes to Cebu...travel, culture, fun...'. Not for those with a snake phobia!

KEY TERMS

The physiology of stress – the biological characteristics of experiencing stress

Stressors – internal and external sources of stress

Stress – lack of balance between the perceived demands of a situation and perceived abilities to cope with such demands

General adaptation syndrome – a description of the body's short- and long-term reaction to stress

Cortisol – a steroid hormone secreted from the adrenal glands in reaction to stress

2 **Resistance** – if the stressor continues the body recovers from the initial alarm and starts to cope with the situation. Sympathetic nervous system activity declines, thus adrenaline and noradrenaline secretion also declines but increases from another part of the adrenal gland, the adrenal cortex. The adrenal cortex is controlled by the amount of adrenocorticotropic hormone (ACTH) in the blood, which in turn is controlled by the hypothalamus. Levels of glucocorticoid hormones (mainly cortisol) are increased in blood sugar and these provide the energy (in the form of glucose) to resist the stress.

3 **Exhaustion** – if the stress continues, bodily resources become depleted so that the adrenal glands cannot function efficiently, blood-sugar levels drop and physical health is affected, e.g. high blood pressure, heart disease, ulcers, etc. can develop.

Research

Selye (1950) gave a variety of stressors to rats, including exposure to extreme cold and heat, intense sound or light, forced exercise, and injections of various organ extracts. He found the stress reaction was identical, consisting of enlargement of the adrenal gland, shrinkage of the thymus, spleen and lymph glands, and ulcers in the stomach and small intestine. This suggests that there is one bodily stress response, supporting the notion of the GAS.

Timio *et al.* (1988) spent 20 years comparing nuns, protected from everyday stressors, with working women, who were not, to find the nuns' blood pressure was unchanged while the working women had heightened blood pressure. This supports the notion that long-term stress has negative effects on physical health in line with GAS.

Leshem & Kuiper (1996) reported that applying different types of stressors, such as heat, cold, drought, salt, etc., to plants produced a similar stress response of retarded growth and lower yields, which suggests that GAS can be applied to plants as well as animals, illustrating the biological underpinning of stress reactions.

Evaluation

GAS was the first theory to explain the physiological effects of stress and influenced a lot of later theories and research, especially into the negative effects of stress upon health.

Much initial research was performed on rats, so it is difficult to generalise results to humans, whose stress responses have a greater emotional and cognitive input. Also rats are more passive in their response to stress – while humans generally respond more actively, i.e. humans try to find a way to lessen stressors, rats don't.

Selye's belief that individuals respond in an identical way to all stressors is not true. Mason (1995) showed that stressors vary in the amount of adrenaline and cortisol they produce depending on the amount of fear and anger created by the stressors. There are also gender differences in stress reactions.

Selye's experiments subjected rats to sustained forms of painful stress, such as surgical injury and rapidly altered temperatures. Many believe these techniques are ethically unacceptable, though Seyle thought them justified, as he hoped they would lead to therapeutic breakthroughs in treating stress-related illnesses.

RESEARCH IN FOCUS

Hans Selye, in devising the *General Adaptation Syndrome* (GAS), conducted extensive research on animals, mainly rats, which involved exposing them to severe levels of stress. How might such research be seen as unethical? How also might it be possible to justify such research in terms of a *cost-benefit analysis*? Why also might the findings of such research not be generalisable to humans?

The sympathomedullary pathway

The *sympathetic nervous system* (SNS) and the *sympathetic adrenal medullary system* (SAM) make up the **sympathomedullary pathway** (SMP). The SMP is concerned with acute (short-term) stressors.

Acute stressors activate the autonomic nervous system (ANS), which has two divisions:

1 The SNS, which is the 'troubleshooter'. It is highly responsive to stimuli and through activation is responsible for emotional states and heightened arousal.
2 The parasympathetic nervous system (PSNS), which is the 'housekeeper'. It is responsible for maintaining equilibrium and calming bodily processes.

These two divisions are opposing forces, interacting to produce the bodily state at any given time. The sympathetic division is the component primarily activated by stressors.

When exposed to an acute stressor, the SNS is activated and, simultaneously, the SAM system stimulates the release of the hormone adrenaline into the bloodstream from the adrenal glands in the adrenal medulla. This hormone prepares the body for the 'fight-or-flight' response by boosting the supply of oxygen and glucose to the brain and muscles and suppressing non-emergency processes like digestion.

KEY TERM

Sympathomedullary pathway – bodily system responding to acute, short-term stressors, comprised of the sympathetic nervous system and the sympathetic adrenal medullary system

Research

Taylor *et al.* (2000) found that acute stress produces the fight-or-flight response in men but the 'tend-and-befriend' response in women. This different effect occurs as women produce more oxytocin, a chemical promoting relaxation and nurturing, suggesting a gender difference in the activation of the sympathomedullary pathway.

McCarty (1981) found that blood plasma levels of adrenaline and noradrenaline (another hormone) were equal in rats of varying ages before subjecting them to one minute of inescapable electric shocks to the feet, but that older rats had lower levels than younger rats after being shocked. This suggests that diminished responsiveness of the sympathomedullary pathway explains the reduced capacity of aged animals to adapt to stressful stimulation.

Horwatt *et al.* (1988) found that if animals are exposed to the same stressful stimulus each day for several weeks, a number of adaptive changes occur in the sympathomedullary pathway. These include the increased production and storage of catecholamines, fight-or-flight hormones produced in response to stress. If such animals are then exposed to a novel stressful stimulus, they display an exaggerated response of the sympathomedullary pathway compared with animals exposed to the same stressful stimulus for the first time. This suggests that acute stress responses develop differently due to previous stress experiences.

ON THE WEB

To learn more about the 'tend and befriend' response in females, especially the evolutionary and biochemical explanations for such a unique female response to stress, go to **www.personalityresearch.org/papers/mccarthy.html** where you will find extensive coverage of Taylor et al's (2000) research. There is also coverage of research which suggests the response is found too in males who take on child caring responsibilities.

Evaluation

A gender difference in the activation of the sympathomedullary pathway may occur due to women's evolutionary role in caring for offspring. If women fought or fled when faced with danger, offspring would be placed in danger, reducing reproductive success. A better policy is to bond with other group members, most probably females.

Studies on human stress responses were mainly conducted on men, as some researchers believed the monthly fluctuations in hormones experienced by women as part of their menstrual cycle would create stress responses that varied too widely to be considered valid. Therefore, such results cannot be generalised to women.

Much research into the sympathomedullary pathway involves animals and thus presents a problem of extrapolation, as the stress-related behaviour of animals might not represent that of humans, with humans more likely to have a cognitive element to their stress responses.

KEY TERM

Hypothalamic-pituitary-adrenal system – bodily system responding to chronic, long-term stressors, comprised of the hypothalamus, the pituitary gland and the adrenal glands

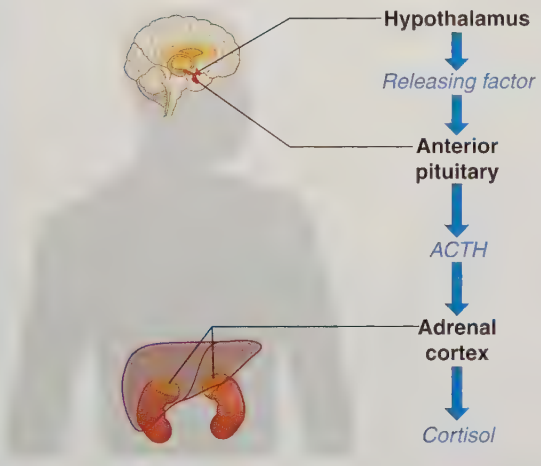


Figure 12.2 The hypothalamic-pituitary-adrenal axis

ON THE WEB

To view a short, informational animation display of the body's response to stress go to **www.youtube.com** and search for 'Stress response in animation'.

The hypothalamic-pituitary-adrenal system

Prolonged, chronic stress activates the **hypothalamic-pituitary-adrenal system** (HPA) (see Figure 12.2). This system is harder to activate than the SMP, being initiated by stressors continuous over a period of time. Such stressors alert the hypothalamus brain area to stimulate the release of the chemical messenger corticotropin-releasing hormone (CRH) into the bloodstream. This in turn stimulates the pituitary gland to release adrenocorticotropic hormone, which travels in the bloodstream to the adrenal glands just above the kidneys, triggering the release of stress-related hormones, the most important being cortisol.

The role of cortisol

The production of cortisol, a glucocorticoid hormone, permits a steady supply of blood sugar, providing individuals with a constant source of energy, allowing the body to deal with stressors. Cortisol release increases the capability to tolerate more pain than usual, but also leads to impaired cognitive ability and reduced immune system performance.

Research

Heim *et al.* (2000) found that women sexually abused as children exhibited increased pituitary-adrenal and autonomic responses to stress, measured by levels of ACTH and cortisol, compared with women who were not sexually abused in childhood. This suggests that pituitary-adrenal system hyper-reactivity due to corticotropin-releasing factor (CRF) hypersecretion is a consequence of childhood abuse. It is also suggested that CRF-receptor antagonists could be used to prevent and treat abnormal conditions related to early-life stress.

Newcomer *et al.* (1999) found that participants given levels of cortisol high enough to produce blood-sugar levels similar to those of people experiencing major stress events, like abdominal surgery, were poorer at recalling prose passages than participants given levels of cortisol only high enough to produce a stress reaction similar to minor surgery, such as having

stitches out. This suggests that stressful stimulation of the pituitary-adrenal system has adverse effects on memory.

Watson *et al.* (2004) compared the pituitary-adrenal system functioning of 26 people with bipolar disorder (manic depression), 27 people with bipolar disorder in remission and 28 healthy controls. They found heightened cortisol levels in bipolar patients, including those currently in remission. This suggests that pituitary-adrenal system dysfunction may be involved in the disease process underlying bipolar disorder.

Evaluation

- There are individual differences with response levels. Mason (1975) found that different individuals produce different levels of stress hormones when exposed to the same stressors.
- Prolonged activation of the HPA system can lead to Cushing's syndrome, which produces weight gain, memory and attention lapses as well as mood disruption. It is caused by extended exposure to high levels of cortisol, often resulting from lengthy periods of stress.
- People respond in more active ways to stressors involving cognitive and emotional factors. Symington *et al.* (1955) found that conscious terminal cancer patients experienced more stress than those in a coma, as they indulged in a more stressful appraisal of their condition.
- People who have had their adrenal glands surgically removed have to be given hormonal supplements in order to combat stressors, illustrating the crucial role of both the HPA system and the SMP in dealing with the physiological effects of stress.
- The biological explanation of stress allows accurate, objective measures to be made.

YOU ARE THE RESEARCHER

Can you explain why for ethical reasons it would be difficult to conduct an experiment to examine the belief that chronic stress reduces the effectiveness of the immune system to fight off disease?

Design instead a correlational study to assess this belief. You will probably have to use, again for ethical reasons, a group of people who are naturally exposed to high levels of stress. What would your co-variables be? What type of statistical test could be used to analyse the data?

STRENGTHEN YOUR LEARNING

1. Explain the difference between acute and chronic stressors.
2. Outline i] the GAS, ii] the SMP, iii] the HPA system and explain to what extent they are supported by research evidence.
3. What other evaluative points can be made about the body's physiological response to stress?

'Take care of your body, it's the only place you have to live in.'

Mara Lawton (2014)

12.2 The role of stress in illness

Small amounts of stress, which are enjoyed as satisfying challenges, contribute to good health; Selye called such stress eustress. However, for many people stress, especially prolonged stress that is not satisfactorily managed, can lead to serious illness, due to **immunosuppression** – the

KEY TERM

Immunosuppression – the impaired ability of the immune system to fight illness and disease

KEY TERMS

Cardiovascular disorders – dysfunctions of the heart and blood vessels

Immune system – bodily system that defends against disease

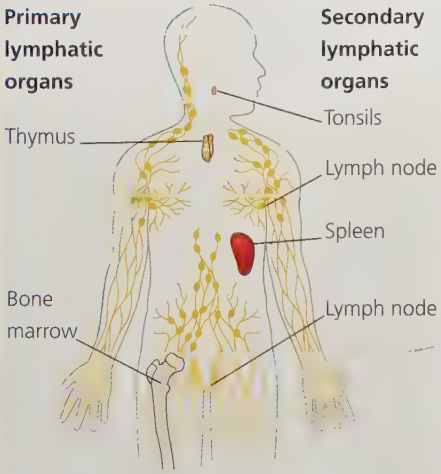


Figure 12.3 The immune system produces cells in many parts of the body that help fight infection

impaired ability of the immune system to fight illness and disease. **Cardiovascular disorders** – dysfunctions of the heart and blood vessels – are especially linked to immunosuppression.

Stress-related illness and the immune system

The **immune system** consists of billions of cells travelling through the bloodstream. These cells are produced in the spleen, lymph nodes, thymus and bone marrow (see Figure 12.3). They move in and out of tissues and organs, defending the body against antigens (foreign bodies), like bacteria, viruses and cancerous cells. The major type of cells are leucocytes (white blood cells), of which there are various types. Some immune cells produce and secrete antibodies, which bind to antigens and destroy them.

With chronic stress the immune system's ability to fight off antigens is reduced and infection becomes more likely. Stress does not actually cause infections but it increases the body's vulnerability to infectious agents by immunosuppression, the temporary reduction of immune system function.

Occasional production of cortisol and other corticosteroids does not harm the immune system, but if produced continuously, as with chronic stress, they interfere with leucocyte activity and the production of antibodies. Stressful events are linked to certain illnesses, such as cancer and chronic fatigue disorder, as well as infections like influenza. It seems, therefore, that although cortisol helps protect against viruses and heal injured tissues, too much cortisol suppresses the immune system, harming the very thing that protects us from infection.

Research

Vaernes & Torjussen (1991) reported a study of Norwegian air force personnel that showed a relationship between perceived work stress and complaints related to immune system activity, demonstrating a link between work stress and immunosuppression.

Cohen *et al.* (1993) performed a research study centring on the cold virus. Of those given the virus, it was found that people were more likely to catch a cold if they displayed high stress scores, suggesting that stress depresses the efficiency of the immune system.

Evans *et al.* (1994) found that students who gave mildly stressful public presentations had increased levels of sigA, an antibody that improves the ability of the immune system to resist infection, illustrating how short-term stress can be beneficial to the functioning of the immune system.

Kiecolt-Glaser *et al.* (1995) gave small wounds to participants and measured how long they took to heal. The healing process took longer in women who cared for senile relatives. This was supported by other measurements of immune system functioning, indicating that prolonged chronic stress lessens immune system functioning.

Evaluation

- The vulnerability of the immune system to chronic stress is influenced by individual differences, such as personality type, gender and age. Johnson & Sharma (2001) gave the toxin fumonisin B1 to rats, finding evidence of immunosuppression in females but not males, while Lindemann *et al.* (1978) found that immunosuppression as a result of physical stress increased with age in mice.
- Much evidence linking stress to immunosuppression is correlational, thus cause and effect relationships are difficult to identify, as other factors, like the unhealthy lifestyles of stressed individuals (such as smoking and drinking), may also be contributory factors.
- Changes in the functioning of the immune system take time to establish and may not be identifiable immediately by research. Longitudinal studies involving measurement of immune system functioning over an extended period would be required.
- Findings gained from research into stress and the immune system are used by health practitioners to help anticipate problems occurring as a response to stressful incidents and to develop appropriate therapies.

CLASSIC RESEARCH

Effect of immunosuppression in medical students – Janice Kiecolt-Glaser (1984)

Janice Kiecolt-Glaser is Professor of Medicine at Ohio State University. She has twice received the Award for Outstanding Contributions to Health Psychology and is best known for her work on the health consequences of stress. In this classic study she demonstrated how chronic stress leads to immunosuppression and increased risk of illness.

Figure 12.4 Janice Kiecolt-Glaser

Aim

To study the capability of the immune system in people facing stressful situations. The prediction was that immunosuppression, measured by the amount of natural killer cell activity, would be reduced when stress levels were high.

Procedure

Blood samples were taken from 49 male and 26 female volunteer first-year medical students one month before final exams and again after the first day of the exams. The blood samples were analysed for leucocyte activity, specifically how much natural killer cell activity, involved in fighting off viruses and tumours, was present.

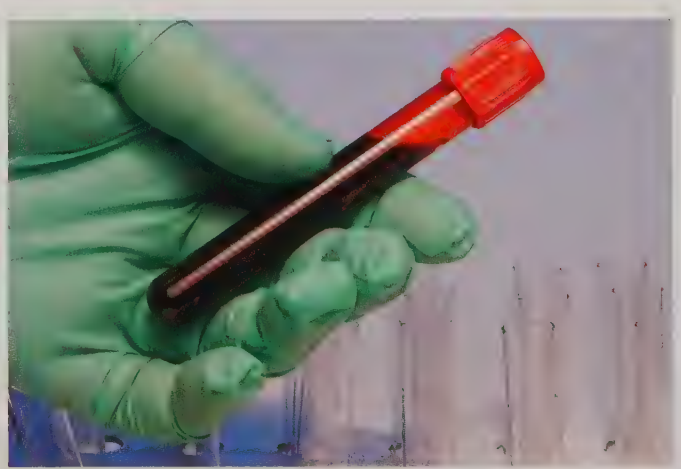


Figure 12.5 Blood samples can show immunosuppression

Questionnaires were also given, assessing psychiatric symptoms, loneliness and life events.

Findings

Natural killer cell activity was reduced in the second sample compared with the first. Immune responses were weakest in those scoring highly for loneliness, stressful life events and psychiatric symptoms, such as depression and anxiety.

Conclusions

Chronic stress is associated with reduced immune function.

There are individual differences in levels of vulnerability to immunosuppression through chronic stress.

Evaluation

- The stressors used were naturally occurring, as opposed to other studies using artificially induced stressors. In other words, the IV and DV were not artificially created.
- As the students were compared with themselves on the two occasions blood samples were taken, this controls for participant variables, such as personality.
- It is not certain whether the stressors caused changes in immune function; other non-controlled situational variables might play a part.
- The sample of volunteer medical students is potentially not representative of the general population.

ON THE WEB

An hour-long National Geographic programme about stress, which includes excellent material on how stress affects health, can be found at **www.youtube.com**. Search for 'National Geographic: The science of stress'.

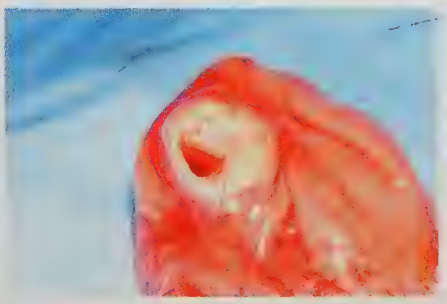


Figure 12.6 Chronic stress can result in CHD from a build-up of fat lining the arteries that supply the heart with blood

'Except for the occasional heart attack I feel as young as I ever did.'

Robert Benchley (1943)

Stress and cardiovascular disorders

The body is a physical structure requiring continual maintenance to stay healthy, but like prolonged exposure to storms damages a building, prolonged exposure to stress causes physical damage to the body. This is especially true of the heart and blood vessels, where prolonged stress can result in *cardiovascular disorders* (CVDs), such as hardened arteries, hypertension (high blood pressure) and *coronary heart disease* (CHD), which results from the arteries supplying the heart with blood becoming clogged up with fatty materials (see Figure 12.6).

Stress can lead to CVDs directly via activation of bodily stress systems or indirectly via stressed people's unhealthy lifestyles, for instance excessive drinking, drug-taking, poor diet and smoking.

Research

Cobb & Rose (1973) compared the medical records of air traffic controllers (a highly stressful job) with those of other air traffic personnel and found that air traffic controllers had higher levels of hypertension, increasing the risk of heart disease. This supports the idea of chronic stress being linked to CVDs.

Krantz *et al.* (1991) looked at 39 people with myocardial ischaemia (a condition where the heart receives a reduced blood flow) and their reactions to low-level stress. Those with the highest myocardial ischaemia readings, when stressed, had the highest increases in blood pressure, suggesting a direct link between low-level cognitive stress and physiological reactions leading to cardiovascular damage.

Rozanski *et al.* (1999) found that some individuals are hyper-responsive to stressors, as the sympathetic branch of their ANS reacts more than in other people, leading to more damage of the cardiovascular systems. This shows that there are individual differences in people's reactions to stress and their levels of vulnerability to CVDs.

Melamed *et al.* (2006) reviewed clinical evidence to find that burnout, characterised by physical, emotional and cognitive fatigue, resulting from prolonged exposure to work-related stress, was associated with heightened levels of CVD and other cardiovascular-related ailments. The mechanisms responsible included immunosuppression, blood clots and poor health behaviours, such as excessive drinking. This illustrates the link between chronic stress and CVDs and suggests damage can occur directly through bodily systems or indirectly through unhealthy practices.

Evaluation

As it would be unethical to conduct experiments into whether stress causes CVDs, much evidence is correlational, which means causality cannot be shown. Nor is it possible to identify specifically which factors are playing the largest contributory roles in the development of CVDs.

In many cases it is probable that the direct effects of chronic stress, such as the over-activation of bodily systems, combine with indirect effects, like heightened smoking and drug taking, to increase vulnerability to CVDs. Cohen & Williamson (1991) found that chronic stress led to individuals smoking and drinking more, taking less exercise and not sleeping enough.

With Krantz *et al.*'s (1991) study it may be that the patients with CVDs would show heightened myocardial ischaemia and blood pressure when relaxed as well as when moderately stressed. As no control was used to compare their behaviour when stressed and not stressed, it is not possible to know.

As with immunosuppression there are individual differences, like personality (see page 528), gender and age, in levels of vulnerability to developing CVDs through exposure to prolonged stress. Vaccarino (2014) exposed 49 female and 49 male post-heart attack patients to a mild emotional stressor (speaking in public), finding females under 50 years of age had twice the levels of myocardial ischaemia than similar males. As the difference was not found in patients over 50, nor with physical stressors, it suggests younger women are more at risk of CVDs through emotional stress.

STRENGTHEN YOUR LEARNING

1. Explain how the immune system works.
2. Explain how chronic stress can lead to immunosuppression. What evidence is there that this is true? What other evaluative points can be made about the relationship between stress and immunosuppression?
3. Outline and evaluate Kiecolt-Glaser's (1984) study of immunosuppression.
4. i) What is meant by cardiovascular disorders? ii) How can stress lead to CVDs both directly and indirectly? iii) To what extent does evidence support the idea that stress can lead to CVDs? iv) What other evaluative points can be made about the relationship between stress and CVDs?

YOU ARE THE RESEARCHER

It seems to be that there are individual differences in the effects of stress upon immunosuppression. Select one area of individual differences, such as age, gender or culture and design an experiment to assess whether such individual differences exist.

What would be your experimental design? IV and DV? Why would a 1-tailed (directional) hypothesis be justified? Compose such a hypothesis, as well as a suitable null hypothesis. What type of graph would be used to display your data? Justify your choice. What statistical test could be used to analyse your data? Give 3 reasons for your choice of test.

ASSESSMENT CHECK

1 Select from the descriptions A, B, C and D below to complete the table relating to stages of the general adaptation syndrome. One description will be left over. **[3 marks]**

A Levels of cortisol are increased in blood sugar

B Daily hassles occur which produce an increased level of stress

C The sympathetic nervous system activates and stimulates the adrenal medulla to secrete adrenaline and noradrenaline

D Bodily resources become depleted so that the adrenal glands cannot function efficiently

Stage	Description
Exhaustion	
Alarm	
Resistance	

2 Daniel has had a lot of stress in his life for a long time and every time he is faced with stressful situations his alcohol and cigarette consumption seems to increase. Daniel has never been one for taking much exercise and he does tend to eat a lot of junk food. Recently Daniel hasn't been feeling very well and his doctor has told him that he has signs of coronary heart disease, a dangerous cardiovascular disorder.
With reference to Daniel, explain the relationship between stress and cardiovascular disorders. **[4 marks]**

3 Research into stress and immunosuppression tends to use correlational studies. Explain why such studies cannot show cause and effect relationships when researching stress and immunosuppression. **[3 marks]**

4 Outline the role of cortisol in the body's response to stress. **[2 marks]**

5 Discuss the role of the hypothalamic-pituitary-adrenal system and/or the sympathomedullary pathway in the body's response to stress. **[16 marks]**

12.3 Sources of stress

Stressors can originate from many different varied **sources**, but psychologists are especially interested in those associated with major and minor **life changes**, as well as the **daily hassles** and irritations that people face. Workplace stress also attracts interest, as it is not only a common source of stress but costs industry a lot in terms of stress-related absences.

'When we least expect it, life sets us a challenge to test our courage.'

Paul Coelho (2005)

KEY TERMS

Sources of stress – the origins and causes of stress

Life changes – occasional events incurring major adjustments to lifestyle

Daily hassles – everyday irritations that produce an overall elevated level of stress

Self-report scales – personal ratings of an individual's stress levels

Social Readjustment Rating Scale (SSRS) – a self-report scale that measures the impact of major life-event stressors

Measuring stress – the means by which stressful experiences are quantified

Life changes

Life changes are occasional events resulting in adjustments to lifestyle, such as the death of a loved one or moving house. They can even be events people regard as enjoyable, such as Christmas or getting married. There is much variation in the impact life changes have. For instance, the ending of a relationship may be devastating for one person but a blessing for another. Equally, when expected life changes do not occur, for instance someone not getting a place at university, they can be stressful in their impact.

Figure 12.7 Getting married is an occasional life event that can be very stressful

Measuring life changes

Self-report scales try to measure the stressful effects of life events so that links between life changes and stress-related disorders can be investigated. The most well known is Holmes & Rahe's (1967) **Social Readjustment Rating Scale** (SRRS), a list of 43 stressful life events that can contribute to illness.

CLASSIC RESEARCH

The Social Readjustment Rating Scale – Thomas Holmes & Richard Rahe (1967)

Thomas Holmes found the visits of his mother-in-law so stressful that every time she came to stay he developed a cold. This observation got him thinking about the relationship between stressful life changes and vulnerability to illness and was the starting point for his attempt, together with Richard Rahe, to develop a means of measuring the impact of various life change stressors.

Figure 12.8 Emotional stress can lead to physical ailments

Aim

To construct a method of **measuring stress**, with the prediction being that individuals are more likely to show symptoms of illness, both physical and psychological, following periods of stress and the greater the stress, the more serious the illness.

Procedure

The medical records of 5,000 patients were examined. A list of 43 life changes commonly occurring in the months prior to the onset of illness was compiled. One hundred judges were told that 'marriage' had been assigned a value of 500 and they were to assign a number to each of the other life changes, indicating how much readjustment was involved relative to marriage.

The average of the numbers assigned to each life change was divided by ten, with the resulting scores becoming the value for each change.

The amount of life stress a person experiences in a given period is measured by the total number of life change units (LCUs). These units are calculated by adding the mean values associated with each life change that individuals have experienced during that time.

Findings

Most life changes were seen as less stressful than marriage, with only six events, like death of spouse, being rated as more stressful. People with higher LCU scores for the preceding year were more likely to experience physical illness the following year. For example, someone scoring over 300 LCUs had an 80 per cent chance of becoming ill, with health problems including sudden cardiac death, non-fatal heart attacks, tuberculosis, diabetes, leukaemia, accidents and sports injuries.

Conclusions

Stress can be measured objectively as an LCU score. Stress can lead to illness. LCU scores can predict the chances of becoming ill, physically and/or mentally.

Evaluation

- The 43 life changes listed are mainly negative, especially those with high LCU scores, so the SRRS may be confusing 'change' with 'negativity'.
- Some life events are ambiguous – for example, those referring to 'change in...' could be positive or negative.
- Brown (1986) argued it might not be change itself but unexpected, uncontrollable change that is stressful. When people were asked to classify undesirable life events on the SRRS, only those classified as 'uncontrollable' were correlated with later illness.
- Correlations do not indicate causality. Someone's general susceptibility to stress or their general level of health may also be important factors.
- Having a high LCU score suggests a health problem is imminent, but the nature of the health problem is not apparent. Different stress-related illnesses appear to be more or less associated with different forms of stressor.
- Holmes & Rahe did find a statistically significant correlation between LCU scores and subsequent measures of health, but the correlation was small. Therefore, the number and type of life changes experienced have some connection with subsequent health, but there is lots of variance and many individual differences in response to life change stressors not accounted for by the scale.
- A score for a particular life change indicates whether it is more or less stressful than other events, but does not say anything meaningful about the nature or extent of that particular event (see Table 12.1).

Rank	Life change	Mean value
1	Death of spouse	100
2	Divorce	73
3	Marital separation	65
4	Jail term	63
5	Death of close family member	63
6	Personal injury or illness	53
7	Marriage	50
8	Fired from work	47
10	Retirement	45
11	Change in health of family member	44
12	Pregnancy	40
13	Sex difficulties	39
16	Change in financial state	38
17	Death of close friend	37
18	Change to different line of work	36
23	Son or daughter leaving home	29
27	Begin or end school	26
38	Change in sleeping habits	16
42	Christmas	12
43	Minor violations of the law	11

Table 12.1 A selection of life changes from the Social Readjustment Rating Scale (SRRS)

Research

Rahe *et al.* (1970) gave the SRRS to 2,700 sailors to assess the number of life changes undergone in the previous six months. Then, during a six-month tour of duty, individual health records were recorded for each sailor and from this illness scores were calculated. A significant positive correlation between LCUs and illness scores of +0.118 was found, suggesting a link between life changes and physical illness.

Jacobs & Charles (1980) found that children with cancer were from families with higher life change scores than children with other illnesses, suggesting a link between stress and vulnerability to cancer and that certain illnesses are more influenced by stress than others.

Li-Ping Tang & Hammontree (1992) measured the occupational stress levels and life changes of 60 police officers over a six-month period, finding a significant association with absenteeism levels, again implying a link between life stress and illness.

Evaluation

- Many studies are retrospective and reliant on accurate and full memory, with participants being asked to recall illnesses and stressful life changes that occurred in the past. This may produce unreliable data.
- Instead of life changes causing illness, it could be the other way round. Some life changes, like being sacked from work, might be an indication of an illness that is already developing.
- With the SRRS, each life change has a predetermined LCU score, but individuals may experience the same event differently. For example, the death of a friend could be less negative if that friend was suffering intense prolonged pain.
- Although they can have a major impact, compared with daily hassles, life events occur infrequently, therefore the cumulative effect of daily hassles, which are constant and repetitive, is a better predictor of stress-related illnesses.
- The SRRS does not distinguish between positive and negative life events and so as it may not be a true measure of life events and stress it can be accused of lacking internal validity. Martin (1989) found no relationship between positive life events, like 'outstanding personal achievement', and ill health.

'I'm wanted at the traffic jam, they're saving me a seat.'

Leonard Cohen (2012)

Daily hassles

Life changes can be extremely stressful, but generally are rare. Most life stress comes from daily hassles, everyday irritations and annoyances that constantly infuriate, like queuing at the shops or being stuck in traffic. Daily hassles, due to their constant nature, are perhaps a better indicator of physical and mental states of well-being, because while life changes can activate big stress reactions, daily hassles tend to accumulate, producing a

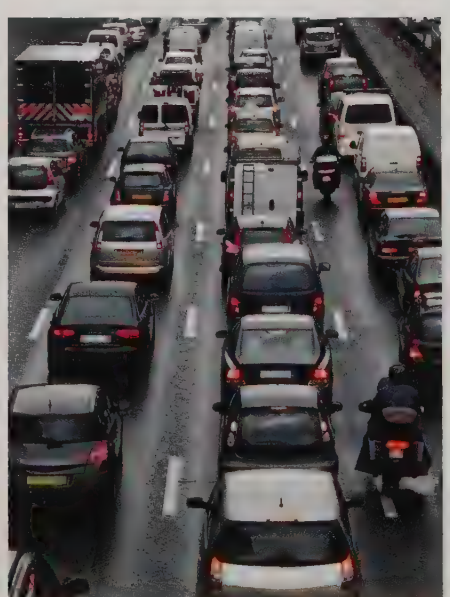


Figure 12.9 Being stuck in traffic jams on the way to work is an example of a stressful daily hassle

heightened level of stress, thus creating a serious risk of illness. Daily life also has uplifts (events that raise spirits, such as meeting friends) and these can neutralise the harmful effects of hassles.

Measuring daily hassles

Self-report scales have been developed to try to assess the stressful effects of daily hassles, so that links between hassles and stress-related disorders could be investigated, such as Kanner *et al.*'s (1981) **Hassles Scale**, which has 117 negative items covering all aspects of daily life and an **Uplifts Scale** of 135 positive items.

Hassles were defined as: 'The irritating, frustrating, distressing demands that to some degree characterise everyday transactions with the environment. They include annoying practical problems, like losing things or traffic jams, and fortuitous occurrences, like inclement weather, as well as arguments, disappointments, and financial and family concerns.'

Daily uplifts were defined as: 'Positive experiences, like the joy derived from manifestations of love, relief at hearing good news, the pleasure of a good night's rest, and so on.'

YOU ARE THE RESEARCHER

Design a questionnaire to assess the effect of daily hassles upon health. Some of your questions should be closed questions that generate quantitative data and use self-report scales (such as a Likert scale) to do so. However, you should also compose some open questions to generate qualitative data. How could you use content or thematic analysis to analyse such data? How could such a questionnaire be used to investigate possible differences in the way daily hassles affect different type of people, for example between people of different cultures?

KEY TERM

Hassles and Uplifts Scale – a self-report scale that measures minor everyday irritations and positive experiences

Research

Kanner *et al.* (1981) performed a study of 100 men and women, aged 45 to 64 years, over a 12-month period. They confirmed that hassles are correlated with undesirable psychological symptoms and that hassles were a better predictor of illness than life events. For instance, divorce creates stress by a number of hassles, like having to cook for oneself, handling money matters, etc. This suggests that daily hassles intervene between critical life events and health, with the collective impact of such irritations proving harmful to health. However, the effect of uplifts was unclear.

De Longis *et al.* (1988) studied stress in 75 married couples by giving them a life events questionnaire as well as the Hassles and Uplift Scales. No relationship was found between life events and health or between uplifts and health, indicating that stress is not related to these factors, although hassles did seem to be associated with next-day health problems.

Sher (2004) found that daily hassles were associated with increased cortisol levels in healthy individuals and that increased cortisol secretion caused by daily hassles contributes to the development of depressive disorders in vulnerable individuals. This implies that it is increased levels of cortisol, caused by the stress of daily hassles, that negatively affect health.

Courtois *et al.* (2007) used self-report scales to measure the influence of life events and daily hassles on teenage drinking and smoking (activities often related to heightened stress levels) and found that although life event scores were associated with greater levels of smoking and drinking, daily hassles were associated even more so, with teenagers smoking and drinking at an earlier age and in greater amounts with elevated levels of daily hassles. This supports the idea of daily hassles, through their repetitive and constant nature, raising vulnerability to illness more than life changes.

Evaluation

- Daily hassles may negatively affect health more, not just because they have a greater collective impact than occasional life events but because individuals receive more social support to lessen the effect of life events than they do with daily hassles. Flett *et al.* (1995) found that 320 students who read a scenario describing an individual who experienced either a life event or daily hassle rated those experiencing the life event as needing and receiving more social support.
- People in collectivist cultures give more social support to individuals when they are stressed and as social support lessens the effect of stressors, it suggests there will be cross-cultural differences in the effect daily hassles will have upon vulnerability to stress-related illnesses.
- Research tends to concentrate on whether life changes or daily hassles contribute most to stress-related illness. However, the two factors may actually influence each other so that the effects of daily hassles depend upon the impact of critical life events. For example, a person recently experiencing the death of a loved one may find daily hassles much more negatively impacting than usual.
- A practical application of research into daily hassles is the usefulness of findings and conclusions towards formulating effective stress management and coping strategies to deal with the ever-rising number of stress-related illnesses.
- A methodological problem in studying daily hassles is that participants are commonly asked to remember retrospectively hassles they have experienced and this is dependent upon accurate and full recall. A solution is to ask participants to keep a diary, where hassles and feelings of well-being are recorded on a daily basis.

YOU ARE THE RESEARCHER

Research into life changes and daily hassles generally uses the correlational method. Design your own correlation into hassles and illness.

You will need to construct a list of daily hassles, for instance 'queuing in the cafeteria' or 'arguments with others'. For each hassle you will need to award a daily score, say 4 for extremely irritating, 3 for very irritating, 2 for irritating, 1 for slightly irritating.

Illness could be assessed by days absent.

How many participants will you need? How long would you have to conduct the study to get sufficient data? What type of graph would you need to construct to plot the data? Which statistical test would be used to analyse the data?

'I love deadlines. I love the whooshing noise they make as they go by.'

Douglas Adams (2000)

Workplace stress

The modern workplace is a major, ever-increasing source of stress. This negatively impacts upon health, but also leads to poor performance at work, resulting in decreased productivity as well as increased absenteeism, accidents and high staff turnover levels. **Workplace stressors** can impact directly upon

KEY TERM

Workplace stressors – aspects of the work environment which have a negative impact on health

Figure 12.10 The workplace can be a significant source of stress in many people's lives

individuals' health and performance and indirectly through unhealthy lifestyle practices, such as heavy drinking. This has a high financial cost for industry and the health services, as well as a major cost in human terms to people's quality of life. Professional services organisation PwC estimates that the cost of absenteeism to industry in 2011 was around £28.9 billion.

It is therefore to everyone's benefit to identify the important factors, in order to reduce the impact of workplace stress upon individuals and to society as a whole. A non-stressed workforce would be a contented and productive workforce.

Important workplace stressors include environmental factors, predictability and role conflict and ambiguity. However, the two major workplace stressors we concentrate on here are **workload** and controllability of work role.

Workload

Workload involves the number of tasks and obligations individuals have to perform or complete within a specific amount of time. The heavier an individual's workload, the more stress they will experience. This is generally supported by research.

Control

Control concerns the degree of influence individuals have over their workload and job requirements. It would be expected that the more control an individual has in their job, the lower their stress levels would be. However, evidence is somewhat contradictory.

Research

Johansson *et al.* (1978) compared a group of high-risk-of-stress workers, whose jobs involved repetitiveness and high levels of responsibility and workload, with a low-risk group of cleaners from a Swedish saw-mill, on levels of stress hormones recorded in urine samples and days absent from work. The high-risk group had higher levels of stress hormones on work days than rest days and had higher levels of absenteeism than the cleaners. This suggests that work stressors create long-term physiological arousal, leading to stress-related illnesses and absenteeism.

Marmot *et al.* (1997) performed a five-year study of London-based civil servants, using questionnaires and health screenings for signs of heart disease. Employees with low job control were three times more likely to have heart attacks than those with high job control. This suggests that high job control is desirable in order to reduce the costs of work-related stress disorders. However, Caplan *et al.*'s (1975) research contradicts this, finding that ambitious individuals, like those in Marmot's study, were more strongly affected by workplace stressors. Therefore the results are not universally generalisable. Also, Marmot's study found no association between high workload and stress-related illnesses, contradicting Johansson's (1978) findings. However, Johansson's study focused on jobs with high levels of responsibility that were demanding in terms of requiring continuous concentration. Therefore Johansson's study may be a more valid measure of high workload.

Hobson & Beach (2000) examined relationships between working hours, perceived work stressors and psychological health in British managers. Managers at two factories completed questionnaires and work diaries. Hours of work were not directly related to psychological health, but were associated

KEY TERMS

Workload – the number of tasks and obligations an individual has to perform or complete within a specific amount of time

Control – the degree of influence an individual has over their workload and job requirements

with individual perception of work stressors, which in turn were associated with measures of psychological health. This suggests that perceived workload is more important in determining psychological health than actual workload, implying a cognitive component to stress-related health risks.

Kivimaki *et al.* (2006) performed a meta-analysis of 14 studies involving more than 80,000 workers from Europe, Japan and the USA. They found that workers with high levels of workload were significantly more at risk of developing coronary heart disease, implying that workload is related to elevated health risks.

Evaluation

- It is not really possible to isolate and test single workplace stressors, thus which workplace stressors are specifically related to stress-related illness and to what extent is difficult to assess.
- Not all workplace stressors are harmful, indeed the workplace presents opportunities to increase self-esteem, confidence and motivational levels and give individuals a sense of purpose and fulfilment, all factors which contribute to positive physical and psychological well-being.
- Different research methods produce different patterns of results. Usually questionnaires are used to assess the effects of workplace stressors, but questionnaires limit the stressors respondents can comment on. Interviews appear superior, as they give individuals more scope to report on individual experiences and thus identify other types of stressors, like interpersonal clashes for example.
- Research into workplace stressors does not account for individual differences, as individuals experience the same stressors in different ways and in varying amounts. This is related to each individual's perceived ability to cope with stressors, with those high in 'hardiness' more able to cope (see page 531). Also, different individuals are more affected by different degrees of job control and workload.
- The findings and conclusions drawn from studies of workplace stressors are quickly redundant, owing to the ever-changing demands of the workplace and its associated stressors. For instance, the increasing use of technology, lower job security and changing job practices place completely new demands upon employees that previous research does not reflect.
- Research suggests that employers can reduce workforce illness and absenteeism by lessening workplace stressors, for instance reducing workloads and giving employees more control over their jobs, a desirable outcome as it would increase employers' profits.

RESEARCH IN FOCUS

Research into workplace stressors generally employs questionnaires, but when the alternative self-report method of interviews is used, different patterns of results are gained, with interviews identifying other stressors not included in questionnaires.

Why, therefore, might interviews be superior? (You may wish to refer to the evaluation feature box above for guidance.)

How might this affect the results of research into workplace stressors?

PSYCHOLOGY IN THE REAL WORLD

As the degree of control individuals have over their jobs is known to be related to vulnerability to stress-related illnesses, it follows that practical applications in the workplace that increase employees' sense of perceived control are desirable, as they reduce stress levels and absenteeism rates, making workers more contented and productive.

One such practical application is *quality circles*. Originally a Japanese idea, the concept was introduced to Britain by the Wedgwood Pottery Company in 1980. Quality circles consist of groups of workers given time away from their jobs to suggest and discuss ideas for improving their work tasks. If accepted, these changes are implemented by the workers themselves, who receive a share of any savings or boosts to profits. Quality circles lessen workplace stressors by increasing employees' controllability of their work role, while also reducing role conflict and ambiguity and improving environmental conditions.

When implemented properly quality circles enrich and empower the lives of workers, creating harmony and improved performance. Workers become happier, less stressed and less prone to absenteeism through stress-related disorders and all by the simple mechanism of giving workers more control over their job.

Figure 12.11 Statue of Josiah Wedgwood, founder of the Wedgwood Pottery Company

STRENGTHEN YOUR LEARNING

1. Explain the difference between life changes and daily hassles. Which has more effect on stress-related illnesses? Explain how both are measured.
2. Outline and evaluate Holmes & Rahe's (1967) study of life changes and stress.
3. Give evidence from two research studies that illustrate the relationship between i) life changes and stress (other than Holmes & Rahe), ii) daily hassles and stress. iii) What other evaluative points can be made about these relationships?
4. Outline the impact the workplace can have as a source of stress.
5. What have research studies suggested about the roles of workload and control as sources of stress? What other evaluative points can be made about workplace stressors?

'If you cannot measure it you cannot improve it.'

Lord Kelvin (1898)

KEY TERM

Physiological measures of stress – the quantification of stressful experiences by biological means, such as levels of stress hormones and blood pressure

12.4 Physiological measures of stress

As stress affects the body physically it presents ways of objectively measuring stress. Blood and urine are examined to assess the levels of stress hormones, such as corticosteroids like cortisol and catecholamines like adrenaline. Blood pressure also provides reliable measures of stress

levels, as blood pressure is higher when individuals are stressed. Another useful measurement is speech analysis. Stress increases respiration (breathing rate), which heightens sub-glottal pressure and in turn the pitch of a voice, as well as changes in the micro tremors of speech muscles. However, the physical measurement of stress attracting most interest is **skin conductance response** (SCR) (also known as galvanic skin response).

KEY TERM

Skin conductance response – a method of measuring electrical conductivity within the skin as an indication of psychological and physiological arousal

Skin conductance response

SCR measures the skin's resistance to electricity. When individuals are stressed they sweat and this increases the skin's ability to conduct electricity. Therefore individuals have a higher SCR when stressed than when not stressed, and have higher SCR scores than other non-stressed individuals. SCR readings need to be taken in stressed and non-stressed states so that comparisons can be made. SCR readings are measured through use of a polygraph (more commonly known as a 'lie detector' – see Figure 12.12). This is a machine that records physiological measures such as blood pressure, pulse, respiration (breathing rate), as well as SCR. The use of a polygraph involves an individual sitting quietly for around 30 minutes so that a baseline score can be established to which readings are compared when the individual is stressed.

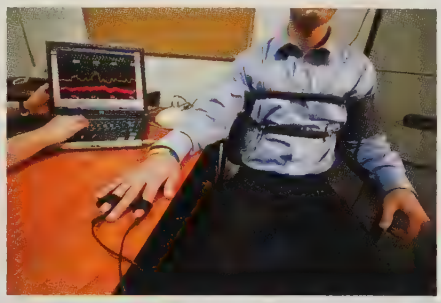


Figure 12.12 Skin conductance response is measured by a polygraph, which requires a trained practitioner to operate

Research

Khalfa *et al.* (2002) played different types of music to arouse the emotions of fear, happiness, sadness and peacefulness in participants and measured their reactions using SCR readings, which were greatest for the emotions of fear and happiness. This suggests that SCR readings can measure stress levels (as portrayed through fear), but cannot differentiate stress from other completely different emotional reactions such as happiness.

Villarejo *et al.* (2012) used a computer-operated stress sensor to measure stress levels in 16 adult participants, who were required to complete tests involving different levels of stress, for instance being relaxed, solving mathematical tests and exposure to anxiety-creating stimuli. It was found that SCR readings were able to detect participants' different stress levels with a success rate of 76.5 per cent, supporting the idea of SCR being a capable though not perfect method of measuring stress levels.

Reynaud *et al.* (2012) showed film excerpts including ones designed to elicit fear to 15 low neurotic and 18 high neurotic participants and found that SCR readings were higher in high neurotic participants, which suggests that SCR measurements have a useful role to play in displaying stress levels in different types of participants.

Kurniawan *et al.* (2013) found that trained operatives were able to differentiate between participants being lightly and more highly stressed (achieved by giving them light and heavy workloads) 70 per cent of the time using SCR readings, but 92 per cent of the time when using features of speech. This suggests that although SCR has some usefulness as a measurement of stress, speech analysis is superior.

Evaluation

One practical application of SCR could be the manufacture of measuring devices that recognise dangerous elevations in stress levels of individuals, so that they would be motivated to adjust their behaviour to achieve healthier stress levels. Indeed, biofeedback, a stress management technique, often utilises SCR measurements to indicate stress responses, with a view to helping individuals control their stress levels (see Biofeedback, page 533).

SCR measurements are useful, as they can be used continuously throughout research and be relatively unnoticed by participants, meaning that they are a true measurement of stress levels. SCR readings are favoured by researchers, as they are easy to perform and of relatively low cost. Readings can be combined with recordings of heart rate, respiratory rate and blood pressure because they are all autonomic dependent variables. Analysis does, however, require trained practitioners.

SCR readings are helpful to psychologists elsewhere. For example, Bogdonoff *et al.* (1961) used SCR readings in Asch-type studies of conformity (see Chapter 1) to show that participants who did not conform to obviously wrong answers given by pseudo-participants had heightened levels of stress, allowing the researchers to conclude that conformity is healthy in terms of lowering stress levels.

A negative aspect of SCR measurements is that they are affected by external factors, like temperature and humidity, leading to inconsistent readings. Internal factors, such as the taking of medications and alcohol, also have an effect. Responses can also be inconsistent even with the same stimulus levels, suggesting they are not a reliable form of measurement.

Another drawback with SCR measurements is that raised by Bakker *et al.* (2011), who showed that SCR readings vary not only from person to person but from one day to another for the same person, again illustrating their lack of reliability in measuring stress levels.

PSYCHOLOGY IN THE REAL WORLD

The Jeremy Kyle TV show (see Figure 12.13) made much of its use of lie-detector tests to decide whether people were telling the truth about having cheated on their partners, etc. Lie detection is performed using a polygraph, which relies heavily on stress readings taken from measurements of SCR. Initial readings are taken during a relaxed phase to create a baseline score, which is then compared with readings when people are asked questions about their alleged unfaithfulness. If they are lying, SCR readings should increase.

However, although the American Polygraph Association claims an accuracy level of above 90 per cent, Lykken (1984) found that the actual accuracy rate is about 65 per cent, little better than the 50 per cent rate achieved by flipping a coin. Lykken also points out that although the test is reasonably efficient at detecting liars, it produces a 50 per cent 'false positive' rate in saying that honest people are liars.

As the consequences of being called a liar on TV shows like Jeremy Kyle's are so devastating, often resulting in shattered relationships, perhaps so much emphasis should not be placed on stress-related SCR readings, which are little different to the ancient Arabic test of detecting liars by pressing a heated knife blade to the tongue of the accused. If lying, their heightened stress made their tongue dry and it would blister – SCR works similarly by stress heightening sweat levels so that electricity conductivity is increased. (*The Jeremy Kyle show was cancelled by ITV in 2019 following the fallout from an incident where a guest, who was judged to have 'failed' a lie detector test, took his own life.*)

Figure 12.13 The Jeremy Kyle Show used SCR readings to detect whether people are lying, but how accurate are such readings?

STRENGTHEN YOUR LEARNING

1. Explain how skin conductance response (SCR) is used as a physiological measure of stress.
2. Explain what research evidence suggests about the strengths and weaknesses of using SCR as a measurement of stress.
3. What other evaluative points can be made about SCR?

ASSESSMENT CHECK

1 Jessica has a responsible job in a busy office. Recently the amount of work she has to do has increased dramatically and she is under pressure from her boss to get work completed to deadline. Although she works very hard she finds it frustrating that her boss constantly interferes, telling her how she should be doing her job.

With reference to the scenario above, explain how the workplace can be a source of stress. **[4 marks]**

2 Place the letters 'LC' next to the following statement that relates to life changes and the letters 'DH' next to the statement that relates to daily hassles. One statement will be left over. **[2 marks]**

- Occasional events which can have a stressful impact.
- The use of instrumental social support to cope with stress.
- Repeatedly being stuck in traffic on the way to work.

3 Stressful events are measured by the Social Readjustment Rating Scale, a list of 43 stressful life events that can contribute to illness. Death of a spouse scores a value of 100 life change units, while pregnancy scores a value of 40 life change units. Explain why life change unit scores can be argued to be an ordinal level of measurement. **[2 marks]**

4 Briefly describe what is meant by skin conductance response. **[2 marks]**

5 Outline and evaluate the effects of workplace stress. **[16 marks]**

'Personality is to man what perfume is to a flower.'
Charles Schwab (1998)

12.5 Individual differences in stress

KEY TERMS

Individual differences in stress – the perceptions and reactions of individuals to stress according to their personality types

Personality types – broad characterisations describing categories of people sharing similar characteristics

Type A personality – personality type characterised by time urgency, excessive competitiveness and generalised hostility, incurring risk of heart disease

Type B personality – healthy personality type characterised by non-competitiveness, self-confidence and relaxation

Although science studies what people share in common, humans are not identical and differ from each other in terms of inherited qualities and learning experiences. Personality, the traits (characteristics) that give individuals their unique identities, is one such important **individual difference** and research shows that the ways people perceive and respond to stressors are attributable in some part to differences in personality.

Psychologists refer to **personality types**, general categorisations that describe groups of people sharing similar traits. Much research into stress focuses on people categorised as having Type A personality, though B, C and D personality types have also been identified and investigated, along with hardiness. Psychologists are especially interested in connections between personality types and different forms of stress-related illnesses.

'Is everything as urgent as your stress would imply?'
Terri Guillemets (2008)

Types A and B personality

Friedman & Rosenman (1959) were interested in the role non-physiological factors played in coronary heart disease (CHD), in particular the role of individual differences in the ways men deal with stressful situations (women were found to be less vulnerable). They discovered that a certain pattern of behaviour, **Type A**, was linked to an increased risk of developing heart disease. The key characteristics of this type are given in Table 12.2.

Table 12.2 The key characteristics of people with Type A personality

Characteristic	Description
Time urgent/impatient	Does several things at once Constantly sets deadlines Has low boredom threshold
Excessive competitiveness	Achievement orientated Aggressive
Generalised hostility/aggressive	Easily irritated/provoked Volatile Displays self-anger

Other Type A traits include insecurity about status and a need to be admired by their peers in order to feel good about themselves. Type A personality is associated with heightened risk of hypertension and CVD.

The researchers simultaneously described **Type B personality**. Type B men were described as having the same degree of ambition, but in a steady, non-competitive manner, and being much more self-confident, relaxed and easy-going, not driven to achieve perfection and much less hostile. Such individuals have no problem relaxing or doing nothing, something Type A men could never do. Type B man is more or less the direct opposite of Type A and is associated with low stress levels and therefore good health.

Research

Friedman & Rosenman (1974) assessed the personality types of more than 3,500 healthy middle-aged men as part of a 12-year longitudinal study. Participants were asked questions relating to impatience, competitiveness, motivation for success, frustration at goals being hindered and their feelings towards being under pressure. High scorers were described as 'Type A' personalities while low scorers were described as 'Type B' personalities. Twice as many Type A personalities developed cardiovascular disorders as did Type B personalities, suggesting that personality traits are a risk factor in developing stress-related illness and that psychological factors can have physiological effects, through the harmful physical effects of stressors being mediated through psychological personality factors. Therefore stressors are not harmful in themselves: it is how people perceive and react to them that is potentially dangerous for health.

Matthews & Haynes (1986) found that coronary heart disease was most associated with the hostility trait of Type A men, especially those expressing high levels of hostility, supporting Friedman & Rosenman's findings and identifying the key trait related to CHD.

Hayes (2000) examined specific components and behaviours of the Type A personality, finding certain characteristics correlated more, or less, with specific forms of cardiovascular disorder. For example, angina sufferers were composed of Type A personalities that were impatient with other people and susceptible to feeling pressure at work, while those with heart failure tended to comprise Type A personalities with hasty personal habits and schedules. This suggests that it is particular traits of the Type A personality, rather than the personality type itself, that are related to specific heart conditions.

Forshaw (2002) supported Matthews & Haynes' findings that the Type A characteristic of hostility was the best single predictor of CHD and a better predictor than Type A personality as a whole. This suggests that it is the specific trait of hostility, rather than Type A personality, that increases the risk of developing stress-related illness, though it does not mean that hostility *causes* CHD, just as we could not claim that a Type A personality did.

Evaluation

- Some researchers have failed to replicate Friedman & Rosenman's (1974) findings, but Miller *et al.* (1996) reviewed several studies, confirming the original results.
- Not all aspects of lifestyle were controlled in Friedman & Rosenman's study, so it may be other factors like hardiness (see page 531) that affect vulnerability to heart disease.
- While Type A men are more at risk of developing CHD, the risk is only relative: the vast majority of Type As do not develop CHD, while some Type Bs do.
- Ragland & Brand (1988) found that 15 per cent of Friedman & Rosenman's original sample had died of CHD, with age, high blood pressure and smoking proving to be significant factors, but little evidence of Type A personality being a risk factor. This suggests the original conclusions are unsupported.
- The Type A personality is too broad a description and it is more useful to think in terms of specific personality traits as stress-related risk factors, as suggested by Matthews & Haynes' and Hayes' research findings.
- Chesney & Rosenman (1980) found that control was an important factor that interacted with personality type to determine responses to stressors. Type A managers experienced greater anxiety when they were not in control, while other managers experienced greater anxiety when they were in control. The issue of perception of control in moderating stress outcomes may be worthy of further research.

ON THE WEB

If you want to know whether you have a tendency towards Type A personality, take the simple online test found at:

http://stress.about.com/library/Type_A_quiz/bl_Type_A_quiz.htm

Remember, though, that this is for your amusement, it is not a clinical diagnosis.

KEY TERMS

Type C personality – personality type characterised by suppression of negative emotions, incurring risk of cancer

Type D personality – personality type characterised by distress, gloom, worry and lack of sociability, incurring risk of heart attacks

Types C and D personality

Apart from Types A and B personality, Types C and D have also been proposed and their possible links to different forms of stress-related illnesses investigated.

Type C individuals are introverted, sensitive, thoughtful and inclined towards perfectionism, taking everything seriously and working very hard. They are conformist and thorough in everything they do and exceedingly dependable. However, because they tend not to express their emotions, are unassertive and try to please others even when it upsets themselves, they are easily stressed and prone to developing certain cancers, depression and illnesses associated with immunosuppression.

Type D individuals are people who like routine and not change. They shun responsibility, are highly obedient and are prone to worry and becoming irritable. Because they lack self-assurance and fear rejection they tend not to express their negative emotions and therefore become very stressed, making them prone to CVDs. Up to 53 per cent of cardiac patients are thought to have Type D personality.

Research

Morris *et al.* (1981) found that Type C women repress their emotions when stressed and are more likely to develop cancer. This was believed to be due to emotional suppression leading to a lowering of the immune system's effectiveness. This was supported by Greer & Morris's (1975) finding that

women diagnosed with breast cancer showed significantly more emotional suppression than those with other, non-life-threatening breast disease.

Temoshok (1987) also found that Type C personalities were cancer prone, with such individuals having difficulty expressing emotion and suppressing or inhibiting emotions, especially negative ones like anger. This was backed up by Weinman (1995), who found it likely that such personality characteristics influenced the progression of cancer and the patient's survival time.

Denollet *et al.* (1996) found that up to 53 per cent of cardiac patients display Type D personality. This was supported by Denollet *et al.* (1998), who found Type D associated with a four-fold increased risk of sudden cardiac death, independent of traditional risk factors such as heavy smoking. These findings support the idea of Type D personality being linked with an increased risk of CVDs.

Schiffer *et al.* (2010) reviewed evidence relating to 6,000 cardiac disorder patients from 49 studies, to find a three-fold increase for Type D heart patients in risk of future CVDs, such as peripheral artery disease, angioplasty or bypass procedures, heart failure, heart transplantation, heart attack or death. This supports the idea that individuals with Type D personality are more vulnerable to CVDs.

'Stress should be a powerful driving force, not an obstacle.'
Bill Phillips (2010)

Hardiness

Kobasa (1979) studied managers with stressful jobs in a company for three years, concentrating on identifying characteristics that distinguished those who became ill from those who did not. The findings allowed her to propose the *hardy personality type*, which she saw as having three key features:

1 **Commitment** – individuals who are committed to what they are doing and have a sense of self and purpose.
2 **Control** – individuals who feel a sense of personal control over what they are doing.
3 **Challenge** – individuals who see change as expected and normal and perceive stressors as challenges to be mastered.

Hardy personality type is associated with lowered physiological arousal in the presence of stressors, leading to a reduction in stress-related disorders. For this reason *hardiness training* has been developed as a form of stress management.

Research

Kobasa (1979) measured the stress levels of 800 business executives with the SRRS, finding that individuals with equal stress levels had different illness levels. This suggests that some people had hardy personalities that afforded them a degree of protection against the effects of stress. Further investigation revealed that individuals with high stress and low illness levels scored high on control, commitment and challenge, which suggests that these characteristics are the important components of **hardiness**. This also implies that if people can be trained to be hardy, they will cope better with stress.

KEY TERMS

Hardiness – healthy personality type characterised by control, commitment and self-improvement

Commitment – an element of hardiness characterised by individuals having a sense of purpose in what they do

Control – an element of hardiness characterised by having a sense of personal power over events

Challenge – an element of hardiness characterised by individuals who perceive stressors as goals to be mastered

Figure 12.14 What some people see as stressful, those with a hardy personality perceive as a challenge to be mastered

Sarafino (1990) found that people who undertook hardiness training developed lower blood pressure and felt less stressed, suggesting hardiness reduces the negative effects of stress and can be taught to people as a stress management technique.

Wiebe (1991) gave a stressful evaluative task to participants categorised as either low or high in hardiness. Those high in hardiness saw the task as less threatening and responded to it more positively. Males high in hardiness displayed less physiological arousal than males of low hardiness, though no differences in physiological arousal were noted in female participants. Though supporting claims for hardiness being related to lower experience of stress, the findings suggest some gender differences in arousal levels associated with hardiness.

Westman (2009) gave 326 Israeli Defence Force officer cadets a stress questionnaire at the start and finish of a training course and found that those displaying characteristics of hardiness experienced less perceived stress, supporting the idea that hardy personality type inoculates individuals against stress-related illnesses.

Evaluation

The studies into Type C women suffering from cancer might be considered unethical, as they may cause further distress to seriously ill women. However, the findings could be used to formulate effective strategies to reduce the chances of Type C women developing cancer.

There is no evidence that people divide easily into separate personality types. Individuals may have elements of many of these characteristics and indeed labelling people could lead to self-fulfilling prophecies, where individuals adopt the characteristics ascribed to the label put upon them.

It could be that hardiness does not exist. Funk (1992) believes a low hardiness score just means that a person is negative and it is this that results in the debilitating effects of stress. It could be that commitment and challenge are not as important as control in alleviating the effects of stress.

As Kobasa's research was mainly done on wealthy managers, her results are not generalisable to other sections of society. However, subsequent research on soldiers, fire-fighters and students has backed up her findings.

There are ethical concerns with conducting research that subjects participants to dangerous levels of stress. For this reason most research concentrates on stress that occurs in natural situations.

STRENGTHEN YOUR LEARNING

1 Outline the characteristics of individuals with Types A, B, C and D and hardy personalities.
2 What has research evidence suggested about each personality type's link with stress-related illnesses?
3 What other evaluative points can be made about each personality type?

RESEARCH IN FOCUS

The research carried out into Type C women (see research above) might be considered unethical, as it may cause additional distress to women already ill with cancer. However, such research might be considered ethical by reference to a cost–benefit analysis.

Explain what is meant by a cost–benefit analysis and how it might be applied in this instance.

'Give your stress wings and let it fly away.'
Carin Hartness (2008)

'How beautiful it is to do nothing, and then to rest afterward.'
Spanish proverb

12.6 Managing and coping with stress

Modern life is increasingly stressful, with high costs to pay upon people's health and quality of life, as well as the cost to industry and health services in terms of stress-related illnesses. Heightened stress levels also lead to increased rates of violent crime. Therefore an understanding of stress that leads to practical applications in the form of stress management techniques that reduce stress levels is desirable.

There are two general types of **stress management**: biological methods, such as **drug therapy**, and psychological methods, including stress inoculation therapy and biofeedback.

Drug therapy

Drugs are a biological and direct form of treatment that enter the bloodstream to reach the brain and affect the transmission of chemicals in the nervous system called neurotransmitters, facilitating communication between neurons (brain nerve cells).

Anti-anxiety drugs are used to treat stress, slowing down the activity of the central nervous system to suppress the physical symptoms of anxiety. They are often a starting point to treat stress-related conditions, with psychological methods added later on, when drugs have reduced symptoms sufficiently for psychological methods to have a positive impact. Two of the most commonly used anti-anxiety drugs are **benzodiazepines** (BZs) and **beta-blockers** (BBs).

Benzodiazepines

BZs, like Valium and Librium, work by increasing the effect of the neurotransmitter GABA, which has a dampening, or quietening, effect on many of the brain's neurons. GABA works by allowing an increase of chloride ions into the neurons, making it more difficult for other neurotransmitters to stimulate them. This results in the slowing down of neural activity, creating a sensation of calm. The effect of BZs is to permit an even greater increase of chloride ions, boosting GABA's soothing effect. BZs also dampen the excitatory effect of the neurotransmitter serotonin, further slowing down the activity of the nervous system and adding to the feeling of relaxation.

BZs are for short-term use only, due to possible side effects like dependency, cognitive impairment and physical unsteadiness. They are a popular course of treatment, with more than two million people treated with them in Britain alone.

KEY TERMS

Stress management – physiological and psychological methods of reducing the negative effects of stress

Drug therapy (stress) – the treatment of stress by chemical means

Benzodiazepines – anti-anxiety drugs that dampen down the activity of the nervous system, creating a sensation of calm and relaxation

Beta-blockers – anti-anxiety drugs that block the transmission of nerve impulses, to reduce heart rate and alleviate the physical effects of stress

Figure 12.15 Used to reduce stress levels, the benzodiazepine Valium is the world's most prescribed drug, but can be addictive

Research

Havoundjian *et al.* (1986) induced stress in rats by getting them to swim. They found that the stress resulted in rapid increases in the amount of chloride ions in the benzodiazepine–GABA receptor complex in the cerebral cortical membranes, thus demonstrating the mechanisms by which acute stress operates. Such changes represent the compensatory response of an organism to stress-provoking changes in the environment and it is this response that BZ drugs have a moderating effect upon.

Davidson (1993) performed an assessment of BZ usage as a treatment for 75 patients diagnosed with social-anxiety disorder. Patients were randomly assigned to the drug or placebo treatment (a 'dummy' treatment with no clinical effect) for ten weeks, with drug treatment found to have an early and sustained positive effect – 78 per cent of patients improved, compared with only 20 per cent of placebo patients. Many drug-treatment patients reported the side effect of unsteadiness, with some forgetfulness and loss of concentration. A two-year follow-up study found a significant advantage in function among those treated with BZ drugs than a placebo, suggesting BZs are effective in the short and long term.

Zandstra *et al.* (2004) studied 164 short-term and 158 long-term users of BZs, finding that it was older, less well-educated, lonely patients, who tended to use avoidant-coping strategies to deal with stress, who were more likely to be long-term users. As long-term BZ usage is not seen as desirable, the findings suggest that patients with these characteristics should be treated with alternatives in the short term or be closely monitored if BZs are prescribed.

Evaluation

- BZs are easy to take, cost effective and popular with patients due to the familiarity of taking pills for a multitude of uses.
- BZs were introduced to counteract high addiction rates in patients taking barbiturates. However, it became apparent that BZs too are addictive, even at low doses, with patients showing noticeable withdrawal symptoms when treatment ceased. The recommendation is that treatment with BZs should not exceed four weeks. However, there is a sizeable minority of patients using BZs long term, with the resultant risks of addiction.
- BZs are recommended as a short-term treatment only, not just because of addiction risks but also because the brain develops a tolerance, giving them only a brief effectiveness.
- A minority of patients experience side effects. However, these can be debilitating and include unsteadiness and cognitive impairments, especially impairment of long-term memory and lapses in concentration. Some patients even become aggressive and/or experience sexual dysfunction. This reduces the effectiveness of treatment, as patients experiencing side effects may stop taking the drugs before symptom reduction is achieved.
- Bernardy (2013) reviewed available evidence concerning US army veterans of the Gulf and Afghanistan wars to conclude that mounting evidence suggests that the long-term harm imposed by BZ use outweighs any short-term symptomatic benefits in patients with post-traumatic stress disorder. Lane (2010) also argues against their use, citing growing evidence that long-term usage incurs brain damage, especially to the cerebral cortex, resulting in short-term memory damage.

Beta-blockers

BBs work by blocking the transmission of nerve impulses. Some nerve endings, when stimulated, release the neurotransmitter noradrenaline, activating beta-adrenergic receptors, tiny structures occurring on cells

in various body parts, including the heart, brain and blood vessels. One effect of this is an increase in the force and the rate of the heartbeat. Beta-adrenergic receptors are also stimulated by the hormone adrenaline, released into the bloodstream from the adrenal glands in increased amounts when an individual is frightened or anxious, also resulting in an increased heart rate.

Beta-blockers 'sit' on beta-adrenergic receptors, blocking them from being stimulated. As a result, the force and rate of an individual's heartbeat are reduced, thus dampening down the physical effects of anxiety.

CONTEMPORARY RESEARCH

Behavioural stress accelerates prostate cancer development in mice – Kulik *et al.* (2013)

Figure 12.16 Mice are often used in medical research

Being diagnosed with cancer and then treated for the disorder is stressful, reducing the ability of the treatment to cure the disease. As laboratory experiments involving stress and drugs are difficult to perform upon humans it is more usual for such research to be performed on animals, especially in the first instance. In this recent study Professor George Kulik and his team at Wake Forest Baptist Medical Centre used mice to investigate whether beta-blockers had a role to play in reducing the stress of cancer treatments.

Aim

To test the effects of behavioural stress in mice being treated with drugs for prostate cancer.

To assess whether beta-blockers improve the efficiency of drug treatment for cancer.

Procedure

Study one. Two types of 6–12-week-old male mice were used as participants, first mice that were implanted with human prostate cancer cells and second mice that were genetically modified to develop prostate cancer.

The first group of mice was treated with a cancer drug currently in clinical trials and the second group with bicalutamide, a drug currently used to treat prostate cancer.

Half of each group were stressed (either by immobilising them for one hour and subjecting them to the scent of fox urine or by injecting them with adrenaline to simulate the physiological response to stress), while half were kept calm and free of stress.

Study two. All mice were then given a beta-blocker to inhibit bodily release of adrenaline, with the effect of slowing heart rate, blood pressure and other bodily functions.

Findings

Study one: in both groups when the mice were kept stress free the drugs destroyed cancer cells and inhibited tumour growth. However, in the stressed mice cancer cells did not die and the drugs did not prevent tumour growth.

Study two: in all mice treated with beta-blockers, cancer cells were destroyed and tumour growth inhibited.

Conclusions

Stress reduces the effectiveness of anti-cancer drugs in treating cancer by stimulating the adrenaline-controlled signalling pathway, so that destruction of cancer cells does not occur.

Beta-blockers act to stop stress-induced tumour growth by blocking the adrenaline-controlled signalling pathway, so that destruction of cancer cells does occur.

Evaluation

- Providing beta-blockers to cancer patients with increased adrenaline levels due to stress could improve the effectiveness of anti-cancer drugs.
- The effects of beta-blockers on the same signalling mechanisms in humans being treated with anti-cancer drugs need to be tested to see whether they work in the same way.
- To increase their efficiency new cancer drugs should be designed that simultaneously target stress as well as cancer.
- The stress induced in the mice is designed to simulate that experienced in the presence of predators, which is somewhat of an automatic non-thinking response, rather different to the stress experienced by people told they have cancer whose stress will have more of a cognitive input, for instance having thoughts of dying, and be more of a chronic long-term stressor than an acute short-term one.
- The ethical concerns raised in breeding genetic strains of mice that develop cancer could be argued to be justifiable in terms of a cost–benefit analysis if the research results in increasing cancer survival rates.

Research

Lau *et al.* (1992) performed a meta-analysis of studies assessing the effectiveness of beta-blockers against stress, finding them effective in reducing high blood pressure. They were found to reduce the risk of death by 20 per cent in patients with heart disease, suggesting that they are a lifesaver in some instances.

Gates (1985) tested the effectiveness of beta-blockers against stage fright in musicians. Thirty-four singing students were given different amounts of the beta-blocker nadolol or a placebo during end-of-term examinations. Low doses improved performance minimally, while high doses hindered performance significantly. This suggests BBs are effective in addressing performance anxiety, but only in small dosages.

Lindholm *et al.* (2005) used data from 13 randomised trials involving 105,000 participants to compare the effectiveness of beta-blockers against other anti-hypertension drugs, finding that the risk of strokes was 16 per cent higher with beta-blockers. There was no difference between the drugs in relation to heart problems and beta-blockers alone reduced the risk of strokes by 19 per cent compared with no treatment at all. This suggests that beta-blockers are effective in treating stress-related CVDs and reducing the risk of strokes, but that there are superior treatments for the prevention of strokes.

Beversdorf *et al.* (2005) stressed participants by getting them to speak publicly before an intimidating audience and then perform a mathematical task while being videoed. There was also a control condition of non-stressed participants who read aloud and counted out numbers while sitting alone in a room. Participants' cognitive flexibility was measured by performance on word-association tasks and unscrambling anagrams. Participants were also tested either with or without being given the BB propranolol. Stressed participants performed worse than non-stressed participants for cognitive flexibility, but stressed participants treated with the BB performed as well as the non-stressed participants, suggesting that BBs reduce the negative effects of stress upon cognitive performance.

Evaluation

- BBs have an immediate effect, acting directly on the body to reduce heart rate and blood pressure, therefore are a desirable treatment against possible fatal cases of stress-related hypertension.
- Unlike BZs, BBs are not associated with dependency and addiction problems, but can have serious side effects, such as cold extremities, tiredness, nightmares and hallucinations.
- BBs have a purely physical action and are therefore more useful as an immediate, short-term treatment. They are not effective as a long-term treatment for stress conditions with more of a psychological element to them.
- Like many drug therapies, BBs do not address the cause of a problem, merely its symptoms. Therefore the medication only 'masks' effects and once treatment ends, symptoms return, suggesting drug treatments are not a cure.
- BBs are taken in tablet form and so are trusted by and familiar with people. Compared with other therapies they are cost effective, do not require a therapist to administer and so are often favoured by clinicians, even though better long-term therapies exist.

'What doesn't kill you makes you stronger.'
Friedrich Nietzsche (1888)

Stress inoculation therapy

Meichenbaum (1977)

Stress inoculation therapy (SIT) is a psychological form of stress management that involves cognitive restructuring, changing the way people think about themselves and their lives in order to alter their emotional responses and behaviour. SIT attempts to reduce stress through changing cognitions (thoughts). It believes that people find things stressful, as they think about them in catastrophising ways – misperceiving events in ways that make them seem more threatening and distressing than they really are.

The cognitive part of SIT involves individuals being trained to recognise stress symptoms and the behavioural part involves the use of skills to act upon the causes of stress.

SIT is like biological immunisation, where a small, harmless dose of an infectious disease is given to vaccinate an individual against an infection. SIT therefore allows an individual to become resistant to a stressor by exposing them to a small 'dose' of it, so that they can tolerate greater levels of the stressor later on. This is done by giving the individual a positive experience of the stressor.

SIT is used to treat acute, short-term stressors such as dental visits, chronic, long-term intermittent stressors like recurring headaches, chronic long-term continual stressors like medical illnesses, as well as anger control.

SIT restructures the way an individual thinks in three phases:

1 **Conceptualisation** – the therapist gets the patient to think about how they deal with stressful situations and discuss how successful these strategies are. Negative self-statements that make stressful situations even more stressful, for instance *'I did badly with my essay therefore I will fail the exam'*, are identified.
2 **Skill acquisition and rehearsal** – the therapist helps the patient develop and practise coping statements to use in stressful situations that counteract their negative self-statements, like *'I am in control of this situation, it isn't in control of me'*. Other techniques include relaxation exercises to reduce physiological arousal and learning how to realistically assess situations.
3 **Application and follow-through** – patients visualise using stress-reduction techniques learned in the second phase and then use them in role-play exercises and lastly in real-life situations. Once the patient can cope with a relatively non-threatening situation, a more threatening one is presented and the process is repeated – for instance, imagining talking to people, then practising it in role play and finally talking to colleagues at break time.

KEY TERM

Stress inoculation therapy – type of cognitive behavioural therapy that cognitively restructures emotional and behavioural responses

Figure 12.17 SIT works like a vaccination, getting individuals to cope with small doses of stress so that they can deal with higher levels in real-life situations

Research

Jay & Elliot (1990) developed a videotape for parents of 3–12-year-old children with leukaemia who were undergoing bone marrow treatment and lumbar punctures. One hour before treatment, parents were shown a film of a model parent employing self-statements, relaxation techniques and coping imagery rehearsal. The parents then practised these skills. Compared

with parents receiving child-focused interventions, the SIT-treated parents showed significantly less anxiety and enhanced coping skills. This implies SIT to be an effective treatment for acute, short-term stressors.

Meichenbaum (2001) reports that SIT modelling films have successfully controlled anger in alleged rape victims when preparing them for forensic examination.

Holroyd *et al.* (1977) assigned 31 participants experiencing intermittent chronic tension headaches to an SIT group, a biofeedback group (see page 538) or a no-treatment control group. They found that only the SIT group showed substantial improvements in daily reductions of headaches, suggesting SIT is an effective treatment for chronic, long-term intermittent stressors and is superior to physiological treatment.

Holcomb (1986) assigned 26 psychiatric patients with severe stress and anxiety disorders to a) SIT, b) a combination of SIT and drug treatment or c) just drug treatment, finding SIT superior to drugs in reducing symptoms of depression, anxiety and distress. A three-year follow-up study revealed that patients from the SIT alone group required fewer admissions for psychiatric problems than other patients, suggesting that SIT is superior in treating stress-related disorders and that drugs actually hinder recovery.

Evaluation

Although some research shows SIT is effective in treating combat-based stress in the military, many studies find it ineffective. This may be due to the stigma associated with mental health issues in the military, with many soldiers only reluctantly undergoing treatment. Soldiers may hold the stereotypical view that psychological problems are the result of weaknesses in character and may hinder promotion chances. In addition, military SIT programmes tend to be delivered via an academic lecture format that is sometimes not appropriate or engaging for soldiers.

Figure 12.18 SIT has not proven useful to soldiers in combat situations, as it is not necessarily delivered in an appropriate way for them

SIT inoculates against future as well as current stressful situations, as it is effective over long periods and across different stressful situations. Patients continue to practise and apply skills they have learned to any type of stressful situations they come up against.

SIT is not an easy option, requiring patients to be motivated and committed over long periods. This is not always an easy thing for individuals suffering from stress-related disorders to achieve.

There are so many separate threads to SIT that it is difficult to work out which component – relaxation, cognitive appraisal, practical life skills and so on – is most important in addressing the negative effects of stress. It could just be relaxation.

YOU ARE THE RESEARCHER

Design an experiment that tests how well SIT works. You will need an aim and a suitable experimental hypothesis. What would your IV and DV be? Consider why you would need a control condition.

How would the effectiveness of SIT be measured?

What statistical test would be used to analyse the data? Give three reasons for your choice of test.

Biofeedback

Biofeedback is a behaviourist method of stress management involving training people to lower stress levels by using physical signals from their bodies. Patients are attached to a machine (see Figure 12.19) giving visual or auditory feedback about physiological activity, for instance whether heart rate is at a desired level. The biofeedback machine acts like a 'sixth sense', giving individuals an awareness of the physiological activity inside their bodies. This might involve a light flashing or a buzzer beeping every time they get stressed and their muscles tense. Patients learn to slow down the light or buzzer by relaxing their muscles. To do this they are taught relaxation techniques, such as breathing control, which help to dampen the physical effects of stress and bring them under personal control. Biofeedback allows patients to alter brain activity, blood pressure, heart rate and other bodily functions that are not usually under conscious control.

Patients are set targets, for instance reducing muscle tension, and the relaxation techniques help them reach their targets, reinforcing the behaviour (strengthening it, making it more likely to reoccur).This type of operant conditioning requires no conscious thinking to be learned and the patient transfers these new skills to real-life situations.

KEY TERM

Biofeedback – the gaining of awareness and control over bodily functions in order to reduce stress levels

Figure 12.19 Biofeedback involves being connected to a machine that gives feedback about physiological activity within patients' bodies

Research

Bozsik *et al.* (1995) found that biofeedback and relaxation exercises helped 20 Hungarian elite biathlon competitors reduce the bodily stress levels created by vigorous cross-country skiing, so that they could control their fine-motor muscles in order to successfully shoot at targets. This suggests biofeedback has practical applications in reducing stress levels for competitive sportspeople.

Figure 12.20 Biofeedback has proven useful in sports such as biathlon, which require control of bodily stress levels in order to be successful

Lemaire *et al.* (2011) gave biofeedback-based therapy to 40 medical doctors (a stressful occupation) three times daily for 28 days, with the participants' stress levels then monitored for a further 28 days. There was a similar control group who received no biofeedback. The stress levels of the biofeedback group decreased significantly and were maintained over the next 28 days, but no such improvements were seen in the control group. This suggests that biofeedback can reduce doctors' stress levels, improving their job capability.

Bouchard *et al.* (2012) found that a group of soldiers given one 30-minute session of biofeedback per day for three days while playing a stressful video shooting game had lower stress levels (measure by cortisol levels in saliva and heart rate) when undergoing a live simulated ambush where they had to apply first aid to a wounded soldier than a similar group of soldiers who received no biofeedback. This suggests that biofeedback is effective in reducing stress levels and has practical applications in combat situations for military personnel.

Zauszniewski *et al.* (2013) taught 20 grandmothers to use a biofeedback machine and relaxation techniques and got them to apply the therapy at home for four weeks. Data concerning stress and negative thoughts and emotions was collected by questionnaires and interviews. Significant improvements in stress levels were noted at 2, 8 and 14 weeks after using the therapy. As more and more grandparents experience increased stress from acting as full-time child carers, the findings suggest biofeedback can reduce and maintain reductions in their stress levels.

Evaluation

Biofeedback has successfully addressed a variety of stress-related physical disorders, illustrating its wide-ranging usage as a stress management technique.

Biofeedback is not invasive and has no negative side effects or addictive qualities, giving it an advantage over drug therapies.

Relaxation strategies learned through biofeedback can be continually applied in stressful situations, giving the therapy long-term usage.

Attanasio *et al.* (1985) found that biofeedback works well with children, as they are more willing and try harder to achieve success, suggesting the therapy is suited to those motivated to reduce their stress levels.

It is not fully understood how biofeedback works – it may be that its success is due to learning to relax, which leads to alleviation of stress symptoms, or it may be that patients acquire a greater sense of perceived control, which lowers stress levels.

The treatment is relatively expensive, requiring specialist equipment and supervision. If the success of biofeedback is indeed due to relaxation, then such specialist equipment and supervision are unnecessary.

It was originally hoped that biofeedback would give such control over bodily systems that it would do away with drug treatments and their negative side effects. Although biofeedback has proven that humans can exert some conscious control over seemingly involuntary bodily functions, there is a limit to which we can do this, meaning other stress management therapies have a role to play, too.

ON THE WEB

A visual presentation of how biofeedback works (with sub-titles) can be seen at **www.youtube.com**. Search for 'Biofeedback for stress related health problems'.

KEY TERM

Gender differences in coping with stress – the varying means by which males and females deal with stress

Figure 12.21 Females tend to have more social support to call upon in times of stress than males

Gender differences in coping with stress

There is a **gender difference** in the way males and females respond to stress that seems biologically based. Taylor *et al.* (2000) found that acute stress produces the 'fight-or-flight' response in men, but the 'tend-and-befriend' response in women, because females produce more oxytocin, a hormone released from the pituitary gland that promotes nurturing and co-operation. This gender difference affects the way males and females cope with stress.

Females use social support networks more, possibly because they are biologically wired at times of stress to be more caring and protective and thus are able to utilise social support. This means that they are generally more able to deal with stress than men. Females also generally have more social support, like close friendship groups, to call upon than males. Again this may be biological in nature, or because females are socialised (taught by society) to have more and closer friendship groups and to be able to express their emotions more openly.

Because females tend to express their emotions more openly they also use emotion-focused coping strategies more. Such strategies aim to reduce the negative effects of stress by making individuals feel positive about stressful situations. Some emotion-focused strategies are positive ones, like seeing stressful situations as opportunities for self-improvement, while others are negative, such as denying that the situation exists. Women generally have higher stress levels than men and this could be because they assess stressors as being more severe (or because they just have more stressful lives than men). This tends to result again in women generally dealing with stress in more emotionally focused ways.

Males are generally more reluctant to perceive or admit that stress affects them negatively, which affects the way they cope with stress – they tend to be more reluctant to make necessary changes to their lifestyle or to manage their stress. Males are less likely to seek professional help from therapists and this again has a negative impact. Men often use more problem-focused

coping strategies, where they confront stressors head on, for instance taking personal responsibility for dealing with the situation. Females are more likely to seek professional help and to use a multitude of strategies, while men often are more likely to try to deal with stress by themselves or to reduce its effects through physical activity like sports.

Research

Matud (2004) assessed gender differences in stress and coping strategies in 2,816 people, finding that the women rated stressful life events as more negative and less controllable than the men. This, coupled with the fact that many women had more family- and health-related stressors, while many men had more financial and work-related stressors, affected coping styles. Women often used more emotional avoidance styles, while men often were more emotionally inhibited. This suggests women often cope less well with stress because they use more negative, emotion-focused strategies, though men's tendency to be unable to express emotions could have long-term health impacts.

Garnefski (2004) administered the Cognitive Emotion Regulation Questionnaire to 630 males and females, finding that females often used more emotion-focused strategies dwelling on thoughts and feelings associated with stressful situations and often accorded more blame to themselves for stressful situations. Females also often had higher levels of depression. This suggests a tendency for females to use more maladaptive emotion-focused strategies than males and that their generally higher rates of depression can be linked to less effective ways of coping.

Ptacek *et al.* (2014) found that females often used more social support and emotion-focused coping strategies with an achievement-related stressor than males, who often used more problem-focused coping strategies. This suggests that males and females can be socialised and/or are biologically focused to deal with stressors differently.

Tamres *et al.* (2014) assessed evidence from several studies to find that females often use a wider selection of coping strategies and are more likely to seek social support to deal with stressors. Females were also more likely to engage in negative emotion-focused strategies, which explains why they tended to perceive stressors as more severe than males did.

Evaluation

- Findings of gender differences in coping strategies are often based on self-report measures that are prone to bias and therefore need validating by alternative methodologies.
- In Garnefski's study, 2,029 people were approached to participate, of whom 630 accepted (31 per cent). The sample may therefore be biased, for instance more severely depressed people may have been less willing to participate.
- The fact that women often use emotion-focused strategies can have negative effects, as it delays dealing with the problem.
- Dividing the way that people cope with stress by gender is simplistic and may create self-fulfilling prophecies where people react in the way they think they ought to because of their gender. There are wide individual differences between people, meaning that many males and females will not cope with stress in gender-stereotypical ways.
- Gender differences in coping strategies may actually exist, as males and females often have different types of stressors to deal with. Perhaps females use emotion-focused strategies more, as the types of stressors they deal with have more of an emotional content and impact, such as ill-health in loved ones.

'It's the friends you can call up at 4 a.m. that matter.'
Marlene Dietrich (1962)

The role of social support in coping with stress

One important factor in how well individuals deal with stress is the degree of **social support** they get from family, friends, work colleagues, therapists, etc. The more social support individuals get, the better able they are to cope with stressful situations, with the social support acting as a buffer against the stressors. A lack of social support not only prevents individuals from dealing with stress, it can also lead to a sense of isolation and mental illness, such as depression.

What amount and types of social support an individual receives depends on several factors, such as the social networks that a person has and their gender, with females generally having wider social support systems. It also depends on cultural background, with certain cultures, like collectivist ones, having extended family networks that can provide heightened sources of support, such as **instrumental**, **esteem** and **emotional support**.

Stroebe (2000) identified five types of social support:

1 **Instrumental support** – this occurs when others provide practical assistance, either indirectly, like helping out so that an individual has more time and energy to deal with a stressful situation, or directly, such as by helping to deal with the stressful situation themselves, for example loaning money to help cope with financial stressors.
2 **Emotional support** – this occurs when an individual perceives that others care for them, have sympathy for and an understanding of their situation and can be depended upon to provide comfort.
3 **Esteem support** – this occurs when an individual perceives that others value them and hold them in high regard. This strengthens feelings of self-value, which is particularly helpful in dealing with stressful situations, as it helps individuals feel competent enough that they can cope.
4 **Appraisal support** – this occurs where others assist an individual to identify and understand their stressors and their effects on health, permitting a realistic view of stressful situations to be achieved.
5 **Informational support** – this occurs when others are able to give advice and guidance on how to deal with stressful situations, like that from a therapist, or feedback from others as to how an individual is coping.

KEY TERMS

Social support – the degree of assistance and resources available from others to help cope with stress

Instrumental support – where others provide practical assistance in dealing with stress

Esteem support – where others demonstrate that an individual under stress is valued and held in high-regard

Emotional support – where others demonstrate sympathy and an understanding of an individual's stressful situation

Research

Orth-Gomer *et al.* (1993) found that in a sample of 776 50-year-old healthy Swedish men born in 1933, the most common factors in those going on to develop CVDs was smoking and lack of social support, illustrating the importance of social support in counteracting the negative effects of stress. It was also found that only in men who lacked emotional support were the effects of stressful life events harmful, with such men five times more likely to die than those receiving emotional support, further highlighting the value of social support.

Stachour (1998) assessed the quantity and quality of social support for 37 participants. Quantity was measured by the number of interactions with

people within social support networks and quality by the administration of the Perceived Social Support from Friends and Family Measures questionnaire, which includes measures of emotional support, esteem support and instrumental support. It was found that participants with greater quality of social support were healthier, but no such relationship was found between health and quantity of social support, which suggests quality of support is more important than quantity.

Bolger & Amarel (2007) paired 35 female students, who were stressed by being told they had to make a speech that would be graded, with a female confederate each. The confederates gave either visible social support, by directly advising a participant on how to do the speech, or invisible social support, where the participant overheard them giving the same advice, but as an opinion to the researcher. Stress levels after social support was given were measured by questionnaire and it was found that invisible social support reduced stress levels more than visible social support. This suggests that social support that directly indicates to stressed people that they have the ability to deal with a stressor is less beneficial than support given more subtly.

Evaluation

Although social support generally helps individuals to deal with stress in a positive way, if different types of support are offered it can create confusion and overwhelm a person, making them less able to cope. Social support will also not be helpful if it is not perceived as such, or if the type of support makes the stressful situation worse, such as encouraging an individual to drink/take drugs to lessen their stress levels.

Also different types of social support have been investigated it is difficult to isolate and test separate types, making it difficult to assess which types are most influential in helping individuals cope with stress.

It is not fully understood how social support helps combat stress – it may be that social support raises self-esteem, enabling individuals to be more persistent in dealing with stress, or that social support lessens the impact of stressors.

Different types of social support may be more helpful in different situations. For example, when stressed with high work commitments, instrumental support in the form of help babysitting the children may be best, while when faced with the stress caused by the breakdown of a relationship, emotional support may be best.

STRENGTHEN YOUR LEARNING

1. How do i] BZs, ii] BBs work? What side effects are associated with these drugs?
2. What does Kulik's (2013) study suggest about the use of BBs?
3. What does other research suggest about the effectiveness of drug therapies? What other evaluative points can be made about drug therapies?
4. Outline how i] SIT, ii] biofeedback works.
5. How effective does research suggest both these therapies are? What other evaluative points can be made about SIT and biofeedback?
6. Explain why gender differences in coping with stress may exist.
7. What have research studies suggested about gender differences in coping with stress? What other evaluative points are there to consider?
8. Explain how different types of social support can affect how individuals cope with stress.
9. What have research studies suggested about the role of social support in coping with stress? What other evaluative points are there to consider?

ASSESSMENT CHECK

1 A team of researchers assessed the ability of a beta-blocker to reduce the symptoms of stress in 20 participants who were given either the drug or a placebo. Stress levels were measured before and after treatment. The tables below summarise the participants' improvements in stress levels measured on a stress scale.

Drug treatment participants	Stress improvement score
1	+10
2	+15
3	+10
4	+20
5	+12
6	+18
7	+5
8	+7
9	+13
10	+10

Placebo treatment participants	Stress improvement score
11	+3
12	+4
13	0
14	+2
15	+4
16	+8
17	0
18	+1
19	+4
20	+4

a) Calculate the mean stress improvement scores of both the drug and placebo conditions. **[2 marks]**

b) Use the mean scores to plot the data on an appropriate graph. **[2 marks]**

c) Give one reason for your choice of graph. **[1 mark]**

2 Manon is a talented young gymnast who performs well in training but badly in competition due to her high stress levels. Her heart rate becomes very high, she has difficulty controlling her breathing and she experiences uncontrollable tremors in her muscles.
With reference to the scenario above, explain how biofeedback might help Manon cope with the stress of performing in public. **[6 marks]**

3 Place a letter 'C' next to the following statement that relates to Type C personality and a letter 'H' next to the statement relating to hardiness. One statement will be left over. **[2 marks]**

- Personality type characterised by people who like routine and not change, who are highly obedient and prone to worry and becoming irritable.
- Personality type characterised by people who take everything seriously and work very hard, who are thorough in all they do and who tend not to express their emotions.
- Personality type characterised by individuals who are committed to what they're doing, who have a sense of control over what they're doing and perceive stressors as challenges.

4 Outline gender differences in coping with stress. **[3 marks]**

5 Discuss drug therapy in managing and coping with stress. **[16 marks]**

SUMMARY

The physiology of stress

- Physiological reactions to stress are explained through the general adaptation syndrome, the hypothalamic-pituitary-adrenal system and the sympathomedullary pathway.
- Cortisol is a glucocorticoid hormone secreted from the adrenal glands that provides a steady supply of blood sugar to give the body energy to deal with stressors.

The role of stress in illness

- Continual stress can lead to illness, especially through immunosuppression, where stress impairs the ability of the immune system to resist illness and disease.
- Continual stress can also lead to cardiovascular disorders, such as coronary heart disease.

Sources of stress

- Life changes are occasional events incurring major adjustments to lifestyle, and along with daily hassles, everyday irritations that produce an overall elevated level of stress, they can increase vulnerability to stress-related illnesses.
- The workplace is a rich source of stressors, including an employees' workload and the degree of control they have over their job.

Physiological measures of stress

- Stress is measured through self-report scales like the Stress Readjustment Rating Scale and the Hassles and Uplifts Scale, as well as physiological measures such as skin conductance response.

Individual differences in stress

- Vulnerability to different types of stress-related disorders is associated with different personality types, such as A, B, C, D and hardiness.

Managing and coping with stress

- Drug therapies to manage stress levels include benzodiazepines and beta-blockers, while psychological therapies include stress inoculation therapy and biofeedback.
- There are gender differences in coping with stress, due to socialisation processes, as well as biological influences.
- The ability to cope with stress is influenced by the degree and type of social support that individuals utilise.

13 Aggression

Introduction

'The tendency to aggression is an innate independent instinctual disposition in man ... it constitutes the powerful obstacle to culture.'

Sigmund Freud (1913)

We can pick up from someone's body language when they are feeling aggressive towards us. It seems instinctive to do so. It is evident in their tone of voice, their stance and their actions. This chapter tackles the possible explanations of aggression (psychological and biological) and why someone may act that way. It also considers why aggression occurs in certain contexts, such as prisons, and how it can be influenced by the media.

Specific focus here will be upon:

1 Neural and hormonal mechanisms in aggression
2 The ethological explanation for aggression
3 Evolutionary explanations for human aggression
4 Social psychological explanations for human aggression
5 Institutional aggression in the context of prisons
6 Media influences on aggression.

Understanding the specification

- The specification requires an understanding of the neural and hormonal mechanisms in aggression. You need to pay extra attention to the roles of the limbic system, serotonin and testosterone. You also need to be able to explain and evaluate the genetic factors with a focus on the MAOA gene.
- You need to know the ethological explanation of aggression and be able to make reference to innate releasing mechanisms and fixed action patterns. You should also understand the evolutionary explanations of human aggression.
- You should be able to explain and evaluate the frustration–aggression hypothesis, social learning theory and de-individuation.
- You need to understand explanations of institutional aggression, specifically both dispositional and situational explanations for why institutional aggression occurs.
- Finally, you will need to understand the effect the media, especially computer games, has on aggression and more specifically the role of desensitisation, disinhibition and cognitive priming.

These are the basic requirements of the specification. However, other relevant material is included to provide depth and detail to your understanding.

IN THE NEWS

Ψ The Psychological Enquirer

'Harmless wedgie? Maybe not'

Figure 13.1 John Hopoate came up with a way to put opponents off their game

Australian rugby league player John Hopoate had a reputation for unsettling and upsetting opposition players by any means possible and was suspended several times in 2000, once being charged with 'contrary conduct' for ten separate incidents in one game. But in 2001 Hopoate came up with an interesting and creative new type of aggression: shoving his fingers into the anuses of several opponents in order to 'affect their game'. Hopoate and his team mates tried to explain the behaviour as nothing more than a harmless 'wedgie', but opponents and the rugby league disciplinary board disagreed and John was charged with 'unlawful sexual connection'. He was later banned from rugby league and became a professional boxer.

John Hopoate's behaviour is an example of instrumental aggression, where aggression is deliberately used to gain a specific goal, such as putting your fingers up someone's bottom to 'affect' their game.

This suggests a cognitive input, where thought and planning are involved, much different from the use of hostile aggression, where aggression is a biologically controlled, unthinking response to a stimulus, like lashing out at someone who threatens you. This form of aggression seems more deterministic, as it suggests aggression is out of control of the individual. However, the calculated thought behind John Hopoate's actions illustrates that aggression can be controlled and used to achieve a set aim. Therefore Hopoate's actions are better explained psychologically.

13.1 Neural and hormonal mechanisms in aggression

The focus for this section is on how the brain and the biochemistry of the body can affect **aggression** levels. The **limbic system** is a key area of the brain thought to be involved in moderating aggression. Serotonin and testosterone are also implicated in the behaviour.

The role of the limbic system

The limbic system is a central part of the brain involved in processing emotional responses. It is this area of the brain that is implicated in aggressive behaviour and it is also thought that the cortex works to mediate the level of aggression transmitted from that area. It is thought that this happens by moderating testosterone levels in response to environmental triggers. More specifically, the **amygdala**, which is part of the limbic system, is argued to have an important influence. If the amygdala malfunctions in any way due to a tumour, damage or atypical development then the levels of testosterone can be raised, making aggressive behaviour more likely.

KEY TERMS

Neural and hormonal mechanisms – brain structures and chemical messengers that influence aggressive behaviour

Aggression – behaviour intended to intimidate or harm others

Limbic system – central brain area with several functions, including the processing of aggressive responses in reaction to environmental triggers

Amygdala – an area of the brain within the limbic system which processes emotion

Research

Siegel & Victoroff (2009) reviewed the research on the neurobiological and behavioural explanations of aggression (defensive and predatory). They found that both forms of aggressive behaviour seem to be controlled by the limbic system. They also found evidence that the cerebral cortex played an important role in moderating the extent to which aggression was expressed.

Raine *et al.* (1997) scanned the brains of 41 murderers and 41 controls. They found, using PET scans, that some had abnormalities in the way that their limbic systems functioned. This suggests that the limbic system is involved in aggressive behaviour.

Sumer *et al.* (2007) reported on a case study of a 14-year-old girl who, following an MRI scan, was diagnosed with a tumour in the limbic system. This was investigated due to epileptic seizures from the age of three and she was behaving in an aggressive manner, expressing anger and rage. When the tumour was treated with drugs, the patient returned to normal levels of aggression. This seems to suggest that the high levels of aggression could have been prompted by the tumour in the limbic system.

Evaluation

The role of the limbic system in aggressive behaviour is not clear cut. The limbic system is made up of many components so it is not altogether clear which parts may be implicated. It could equally be that there is an interaction between components of the system.

The research linking brain abnormalities to violence is only correlational – this means that there is only an indication of vulnerability to aggression. There are also people who have limbic system abnormalities who do not demonstrate violent behaviour and so causation cannot be ascertained.

The role of serotonin

KEY TERM

Serotonin – a neurotransmitter that regulates feelings of well-being and is associated with control of aggressive responses

Various drugs such as Prozac are thought to be related to lowering **serotonin** levels in some people, which is not the desired outcome. These have the unfortunate effect of depressing mood and increasing aggression in the individual. This has led to some drugs being withdrawn because of this effect on the serotonin levels on the person to whom the drug is administered.

However, the evidence base for the role of serotonin and its effect on aggression is mixed. Some studies show greater amounts of serotonin in the system increase aggression and others show the opposite effect.

The exact role serotonin plays in aggression is unclear. Currently it is thought to mediate an individual's response to a situation. Activation in the brain's limbic region (which is the centre of the emotional response) is not controlled as much by the frontal cortex in individuals with low serotonin. This means, in essence, that an individual with low serotonin has less control over their emotional response, and this can lead to aggression (Crockett & Passamonti, 2011).

Research

Huber *et al.* (1997) found that crayfish with artificially elevated levels of serotonin fought for longer than crayfish with normal levels of serotonin, which suggests that heightened levels of serotonin increases levels of aggression, which refutes studies on humans (and other animals) which suggests low levels of serotonin are associated with heightened aggression. This demonstrates that the relationship between serotonin and aggression isn't clear cut.

Crockett *et al.* (2009a, 2009b) found that participants who had their serotonin levels lowered through diet displayed a higher level of retaliatory aggression against opponents when game playing than participants who had their serotonin levels heightened through taking SSRI drugs. The participants with heightened serotonin levels also showed more compassion when responding to emotional moral dilemmas than those with lowered serotonin levels. These finding support the idea that low levels of serotonin are linked to heightened aggression in humans.

Cherek *et al.* (1996) found in their research that when men take drugs that increase their serotonin levels they display low levels of aggression. This suggests that there may be a causal link between serotonin levels and aggressive behaviour.

Figure 13.2 Serotonin increases aggression in crayfish

Evaluation

- The Crockett & Passamonti study highlights why some people get aggressive when they have not eaten. This could be due in part to a depleted level of tryptophan, which is the dietary source of serotonin. Foods such as eggs and chickpeas are tryptophan rich.
- Much research into neural and hormonal mechanisms in aggression involves animals, which poses a problem for extrapolating to humans. This research is conducted on animals for ethical reasons, and availability of animals, but there is always an issue of using animal studies to explain human behaviour.
- Using biochemistry to explain aggression is deterministic. There is a limited amount of control of the individual over their biochemistry and so, if aggression is explained this way, it is also saying that the individual does not have much control over how they act. This has implications for the legal system and punishing violent crimes.

The role of testosterone

Testosterone is an androgen (male hormone). Females also have testosterone in their bodies but in lower levels. Increased levels of testosterone are thought to be related to increased levels of aggression and of aggressive responses, such as provocation.

If a causal link is to be found then the mechanism behind how testosterone affects aggression levels needs to be documented. Some research on mice has suggested that the enzyme **aromatase** is implicated in the process.

KEY TERMS

Testosterone – a steroid hormone that stimulates development of male secondary sexual characteristics and is associated with aggressive responses

Aromatase – an enzyme which helps metabolise (or process) testosterone

Aromatase is important in metabolising testosterone in the brain and is found in the limbic region of the brain such as the amygdala. So, if there are reduced levels of aromatase in those areas then the testosterone in the brain will not have enough enzyme for it to activate. This means it will have less effect and the response to emotional situations experienced by the amygdala will not prompt a reaction in the testosterone in the system. This reduces the likelihood of an aggressive reaction.

Another way in which the brain mechanism is thought to have an effect is that the level of testosterone affects the activity in the orbito-frontal cortex of the brain. If an individual has high levels of testosterone then the activity in the orbito-frontal cortex is reduced, which means that in an emotional situation there could be a heightened emotionally aggressive response.

Testosterone also influences the activity of serotonin in the brain and therefore can reduce serotonergic activity. As is evident from the previous section on the role of serotonin in aggressive behaviour, low levels of serotonergic activity are implicated in increased aggressive behaviour. It appears that testosterone does not just have an effect in isolation, it seems to mediate the effects of other biochemicals, too.

Research

Connor & Levine (1969) experimented on rats and found that those that had been castrated when they were young had lower levels of testosterone and also displayed low levels of aggression as adults. When given testosterone injections, they still displayed non-aggressive behaviour. This was not the same for rats castrated when adult. If subsequently given testosterone they returned to pre-castration levels of aggression. This demonstrates that the relationship between testosterone and male aggression is not an easy one to understand and may indeed be linked to the influence of testosterone masculinising male brains during early stages of development.

Research by Higley *et al.* (1996) suggests that testosterone levels are not the only factor in aggressive behaviours. They found that testosterone can affect how aggressive an individual feels but that they will not necessarily act on that feeling. Therefore it could be concluded that testosterone levels may underpin the emotional response to a situation but that other factors such as social norms will affect whether feeling aggressive influences the actual behaviour of the individual.

Ellis *et al.* (2009) in their *Handbook of Crime Correlates* reviewed the literature to establish the potential link of testosterone to violent crime. They found that there was a link, but that the relationship strength varied for gender and there was less of an effect for juvenile delinquency.

Evaluation

Much of the research conducted in this field is on animals. This is problematic, for the same reasons stated in the serotonin research, in that the differences between human and animal aggression make extrapolation difficult. Human aggression has many different factors that affect it and as such it is more complex.

Generalising from animal studies is also problematic because certain brain structures are involved with different types of aggression in different species. An example of this is the fact that the cingulate gyrus, an area of the brain, is linked to irritability in cats and dogs but is associated with fear-induced aggression in monkeys. This creates problems in generalising to humans as they have a different brain physiology.

It is important to consider the measures used in research. Aggression is measured often through questionnaires or responses to hypothetical scenarios and therefore the predictive validity is poor. This means that someone may report high levels of aggression in a fake scenario on paper, but were it actually to occur in real life their response might be more passive. Testosterone can be measured using saliva samples and cerebro-spinal fluid, both of which are reliable measures. However, hormonal fluctuations occur throughout the day so test-retest reliability may be low.

It is argued that testosterone may be able to explain only certain types of aggression. Simpson (2001) reports that testosterone is implicated only in inter-male aggression, but has no effect on other types of aggression.

As most of the research is correlational it is important that it is recognised that testosterone levels rather than cause aggression may be a response to it and so caution should be taken when describing the role testosterone plays in aggression.

IN THE NEWS

Ψ The Psychological Enquirer

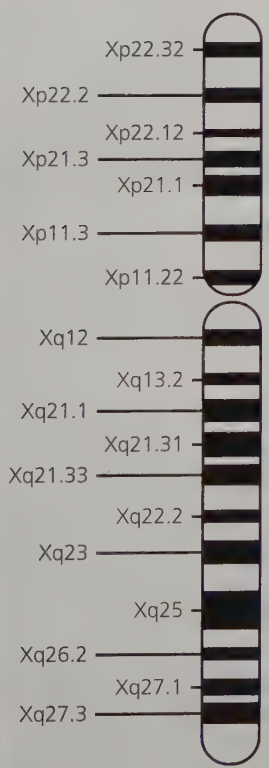


Figure 13.3 An illustration of the MAOA gene

Davis Bradley Waldroup Jr lived in Tennessee, where in 2006, police were called to a disturbance. He was attacking his estranged wife when the police arrived and they also found the body of Leslie Bradshaw, who was a friend of Waldroup's wife.

Waldroup had gone to pick up his children from his estranged wife's home when the attack took place. The children were present. Reports state that the attack was committed in a calm and methodical manner. Waldroup was arrested and charged with murder and attempted murder.

However, his defence argued that he was not culpable for the crimes as he had the shortened version of the MAOA gene. This is nicknamed the 'warrior gene'. The gene is implicated in aggressive behaviour due to excessive amounts of certain neurotransmitters in the system. The expert defence witness, Dr William Bernet, found a match with the gene from a blood sample processed at Vanderbilt University's DNA lab, and stated that its presence, combined with the abuse Waldroup had suffered as a child, increased his chance of a violent offence by 400 per cent.

The jury found that Waldroup was predisposed to violent behaviour and the charge was reduced from murder to manslaughter. This allowed the defendant to avoid the death penalty, which would have been death by lethal injection. Instead he received 32 years in prison.

Waldroup is eligible for parole in 2026, when he will be 52 years old.

This is an example of how research into genetics can be used within the court system to account for behaviour. By saying that Waldroup had a genetic predisposition to violent behaviour meant that he could not be seen as culpable (to blame) for his violent acts, which has far-reaching implications for the legal system.

Genetic factors in aggression

KEY TERMS

Genetic factors – the influence of inheritance upon aggressive behaviour

Metabolisation – the processing of a biochemical by the body

The neural and hormonal mechanisms implicated in aggression suggest that biology is influential in aggressive behaviour. It is therefore no surprise that research is looking at the potential genetic influence on aggression.

It is possible that high levels of testosterone or fluctuating levels of serotonin are genetically determined. This means that certain individuals or families could display higher levels of aggressive behaviour because of their predisposition to biochemical differences from the majority of the population.

Genes can determine levels of testosterone and the speed with which it is **metabolised**. They can also determine the physiology of the brain in terms of the number of receptors and how sensitive such receptors are. A different brain physiology determined by genetics may mean that the pathway between the limbic system and the frontal cortex is weak. These are all ways that our genetic make-up can potentially have an effect on the levels of aggression that we demonstrate in our behaviour.

Genetic influence is traditionally investigated through twin and adoption studies. Family studies are also used. However, these populations are naturally occurring and sometimes psychologists prefer to manipulate the situation in some way by using studies on animals that have been bred for the purpose of research. It is also common to use animal isolation studies as they effectively remove the influence of social behaviour and imitation.

Gene mapping studies have found no specific gene that causes aggressive behaviour. There is some evidence that individuals inherit a predisposition to being aggressive but that the genetic influence alone does not cause aggression. Genetic influence can be mediated by the environment. In other words, the genotype may suggest that someone would be aggressive but the phenotype, after the environment has influenced the individual, may mean aggressive behaviour is not shown.

MAOA gene

KEY TERM

MAOA gene – monoamine oxydase A gene, which affects how neurotransmitters are metabolised that is associated with aggressive responses

The gene monoamine oxidase A (MAOA) has been implicated in aggression as it was found that mice that possessed the gene were extremely aggressive. The gene is suggested to express itself through affecting levels of neurotransmitters.

MAOA is an enzyme that breaks down important neurotransmitters in the brain, including dopamine, noradrenaline and serotonin. The enzyme is controlled by the **MAOA gene**. There are variations of the gene found in humans, and these result in different levels of enzymatic activity. People with the low-activity form (which is called MAOA-L) produce less of the enzyme, while the high-activity form (MAOA-H) produces more of the enzyme.

Studies have found a correlation between the low-activity form of MAOA and aggression (see Research, below). Only about a third of men in Western populations have the low-activity form of MAOA and therefore have the higher levels of neurotransmitters because the excess amounts are not mopped up. There is also an environmental effect as the men who carry the shortened version of the MAOA gene do not automatically display aggressive

behaviour – this seems to occur only if they have been abused as children. Their chance of committing a violent crime is then increased.

Genes are not always activated; some are expressed only if combined with other genes and some may undergo mutation, a random change affecting an animal or human's anatomy and, hence, some aspects of its behaviour. It seems that aggressiveness is influenced by a variation in the MAOA gene, which is sensitive to social experiences early in development; therefore, its functional outcome depends on the environment. This indicates that an interaction of genetics and environment is at work in determining human aggression and that the phenotype differs from the genotype. Possessing the shortened version of the MAOA gene does not automatically make you a fighter.

CLASSIC RESEARCH

Abnormal behaviour associated with a point mutation in the structural gene for monoamine oxidase A – H.G. Brunner (1993)

Figure 13.4 H.G. Brunner

Brunner syndrome was first described in 1993 by H.G. Brunner in his paper documenting the behaviour of five men in a family in the Netherlands. He found, through monitoring their urine samples, that they had an excess of monoamines (noradrenaline, serotonin and dopamine) in their bodies. This was caused by a monoamine oxidase A (MAOA) deficiency. They possessed a shortened version of the MAOA gene and therefore were not able to 'mop up' excess amounts of neurotransmitters.

Brunner found that all of the male family members had this genetic defect and that their behaviour was aggressive when they were under threat, frightened, angry or frustrated. These men also showed borderline mental retardation. Their behaviour was distinctive and anti-social as they demonstrated behaviours such as impulsive aggression, arson, attempted rape and exhibitionism.

Evaluation

This case study has important implications for the legal system and how responsible someone is for any crime they commit. It should be noted, however, that this case study involves five males from the same family and as such is a specific and small sample.

The classic case study by Brunner shows how the MAOA gene can affect families that have the gene present in male members. The fact that, for this Dutch family, there was such a high relevance of aggressive behaviour supports the MAOA gene theory.

Research

Moffitt *et al.* (1992) performed a study on 442 New Zealand males from birth to age 26, keeping a record of experiences of abuse and the presence of the shortened MAOA gene. It was found that those who had suffered abuse and had the low-activity version of the gene were nine times more likely to indulge in antisocial behaviour, including aggression.

Genetically engineered mice with low MAOA levels were studied by Cases *et al.* (1995). They found the mice had atypical serotonin levels and behaviour. As adult mice, they demonstrated increased levels of aggression and were aggressive during mating. This gives support to human studies suggesting that aggression is a direct result of MAOA deficiency and that the increased levels of aggression observed in humans with the gene are due mostly to the genetic defect.

ON THE WEB

There are a great many clips to watch on YouTube (**www.youtube.com**) on the warrior (MAOA) gene. Some films explain the action of the gene, others the effects it is reported to have on individuals, including Davis Waldroup Jr.

Evaluation

The MAOA gene can only attempt to explain aggression in those individuals who possess the shortened version of the gene. This is thought to be one third of men in Western populations. It is often not expressed in women due to their chromosomal make-up. This means that aggression in two thirds of men and most women cannot be accounted for this way.

It may be that this gene is present in a large number of individuals in the population due to the evolutionary advantages it bestows. It is possible that it gives a competitive edge and that risk-taking behaviour is more likely, which, although it does not sound helpful, can make someone stand out in the workplace. It may also be more attractive to the opposite sex and therefore makes reproductive success more likely.

Interaction with the environment is clearly important as well as the gene. The presence of abuse makes the gene likely to express itself, so the presence of the gene alone cannot account for aggression. It is an incomplete explanation.

STRENGTHEN YOUR LEARNING

1. Explain the role of the limbic system in aggression.
2. Explain the role of serotonin in aggression.
3. Explain the role of testosterone in aggression.
4. Give an example of research that supports the role testosterone plays in aggression.
5. Name the three biochemicals thought to be affected by the MAOA gene.
6. What is a weakness of the argument that serotonin is implicated in aggression?
7. How does the MAOA gene affect the likelihood of aggressive behaviour?
8. Give an example of research that demonstrates the role of the MAOA gene.
9. Explain one criticism of the MAOA gene as an explanation of aggression.

13.2 The ethological explanation for aggression

Ethology is the study of animal behaviour. The study of animals can help us understand human aggression in three ways:

1. It helps define aggression and looks at how it occurs in tandem with other factors such as reproduction and threat.
2. The study of ethology, looking at animals in their natural setting, means we can understand the way it has helped the evolutionary process. This is more difficult with humans in the modern-day habitat.
3. When animal behaviour is studied in laboratory settings the conditions can be highly controlled, and this is not possible to the same extent with human participants.

KEY TERMS

Ethological explanation – an understanding of aggression that is gained from the study of animals in their natural settings

Ethology – the study of animal behaviour

One of the key ethological theorists on aggression is Konrad Lorenz (see Chapter 3, page 110), who wrote a book called *On Aggression* (1963).

Innate releasing mechanism

Lorenz suggested that animals had an innate mechanism for aggression and that aggressive behaviour acted as a release. This drive, he argued, then built up until the next aggressive act was performed, when it was expended again. Lorenz argued that aggression was similar to food, drink and sleep in that it was a drive that needed to be satisfied. Just as with the other drives, a physiological deficit would build up and need to be satiated, like an itch that needs a scratch.

The **innate releasing mechanism** is the specific neural circuits hardwired into the brain which monitor the drive, such as aggression.

Fixed action pattern

In ethology, the term **fixed action pattern** (FAP) is used to describe a sequence of behaviours that occurs throughout a species. In other words, all members of the same species act this way. It describes a universal (but species-specific) behaviour. FAPs are innate, which is understandable given how universal they are across a species.

An example of a fixed action pattern of behaviour involving aggression is the male stickleback fish. The FAP starts with the nesting behaviour in spring. Establishing territory around the nest is important to the stickleback so any other male sticklebacks that encroach on the territory are met with aggressive attacks. However, female sticklebacks are encouraged to stay so that they can lay eggs in the pre-prepared nests.

This behaviour was investigated by Tinbergen (1952) using models crafted to resemble male sticklebacks (with red bellies) and females (with swollen bellies). All male sticklebacks attacked the model designed to look like a male member of the species. This shows that the behaviour is invariant (all males do it) and it is a strong argument for the behaviour being innate.

It is argued that these fixed action patterns are adaptive because they increase evolutionary survival chances. This means that with regard to aggression in humans it must increase survival chances if it is to be regarded as a fixed action pattern. This has proven to be one of the issues in applying the theory to human aggression (see Evaluation, below).

Research

Cooper *et al.* (1989) and Cooper (2003) found that when vipers (a type of snake) bite their prey, they secrete a chemical marker to help them locate the body later. This demonstrates how the use of fixed action patterns has an evolutionary survival value, demonstrating the innate nature of such a behavioural mechanism.

Sackett (1966) reared monkeys in isolation and provided them with pictures of monkeys playing, exploring and in threatening poses. As the baby monkeys matured they displayed reactions to the pictures of baby monkeys and threatening stimuli, suggesting that there is a fixed action mechanism to detect threat, which could then lead to aggressive behaviour.

KEY TERMS

Innate releasing mechanism – an inherited automatic physiological means of prompting aggressive behaviour, which occurs in the presence of specific stimuli

Fixed action pattern – aggressive behavioural responses prompted by innate releasing mechanisms

ON THE WEB

Film footage of fixed action patterns in animals can be found on the internet. Search for 'fixed action pattern in animals' on YouTube. Not all are aggressive, but it is useful to see adaptive behaviours performed by animals.

Eibl-Eibesfeldt (1977) argued a number of patterns of aggression in men are highly ritualised and are similar to behaviour found in animals. He cited warfare as an example. However, he also felt that there is an element of control that we are born with, which prevents us from massacring other 'tribes' (groups of people). This suggests, certainly from Eibl-Eibesfeldt's point of view, that there is a distinction between the automatic processing of animals and the more considered processing of humans, so the ethological explanation has limited usefulness in explaining aggression in humans.

Evaluation

Research into the ethological theory of aggression lacks validity. This is because behaviour is defined as aggressive by its outcome, such as injuring or killing another creature. However, it could be argued that this is purely predatory behaviour and the aggressive intent is not present; it is a survival behaviour to get food. It is not often possible to gauge whether the act is aggressive in animals, as they cannot communicate how they feel.

Generalising from animal research to human aggression is problematic. The environment in which an animal and a human develop is very different so there is no merit in generalising behaviours across species. Some species may well have an innate releasing mechanism and fixed action pattern because it is useful to them in their situation, but this cannot be said to be true for all humans.

A key point of the ethological theory is that the behaviour is universal to a species. This is clearly not the case for humans as even within the same situation some will react aggressively, others will not. This makes the presence of an innate mechanism and a fixed action pattern unlikely.

An issue with explaining human aggression this way is that it should confer an evolutionary advantage. It is possible this happens in some circumstances, but in others where, for instance, a female is scared, she will not want the aggressor as her partner. This reduces their chance of reproductive success and so does not show aggression to be an adaptive mechanism.

13.3 Evolutionary explanations for human aggression

KEY TERM

Evolutionary explanations – a biological theory that sees genes for aggressive behaviours as acted upon by natural selection to become more widespread in a population due to their adaptive survival value

Genes mutate and this can affect the behaviour of the individual. Most mutations are harmful and as such, the individuals who have them are unlikely to reproduce and pass mutated genes on to their children. However, sometimes mutations can be beneficial. They may help someone compete over limited resources, increase their chance of meeting a mate thus reproducing and helping them survive. Those that survive may do so because they have benefited from a mutated gene that allowed them to adapt to their environment and gave them an advantage over others.

The **evolutionary explanation** suggests that aggression serves an important function in terms of both individual survival and reproductive

success. It can help an individual to fight for resources if they are in short supply. It might also be, in the case of male aggression, that they appear more attractive to females as they would appear strong. Evolutionary psychologists argue that this would be attractive to women because they would be able to protect offspring.

Figure 13.5 Stags rutting is a way of displaying their attributes to potential mates

Evolutionary theory also argues that humans have a natural tendency for aggression and this goes some way to dominance over other species. The idea of men being aggressive with other men is similar to the rutting of stags (see Figure 13.5), in that it is a chance to display attributes and essentially to show off to females. The victor is more likely to gain a mate or mates to reproduce with. This means they will father more offspring and have a greater chance of furthering their genetic influence on subsequent generations.

Evolutionary theory sees females as having stricter methods for choosing a mate because they have to consider the needs of their children. A potential mate is judged by how well he could provide for any offspring from the union. A man therefore has to display that he has access to plenty of resources to support the offspring. As aggression helps gain access to available resources it can be beneficial to a man. However, so too is the attribute of sensitivity. Indeed, men who express aggression to a woman may equally be less likely to attract a mate as the woman may see him as a threat to offspring. Sensitivity, however, indicates that he will have a nurturing attitude to the children.

Jealousy provides an example of when aggression can confer an advantage in evolutionary terms. Jealousy occurs when an individual fears losing the affections of a mate to another individual. There is therefore a potential threat to their relationship and it is argued that is why aggression is displayed in their behaviour.

Evolutionary theory argues that the same is true for infidelity, which involves a sexual partner being unfaithful. This poses a potential threat to a relationship and the possibility of offspring from the other union. If a woman, for example, has been unfaithful then paternity of any subsequent offspring is not clear.

There is much evidence to back up these claims, coming mainly from studies using forced-choice, hypothetical scenarios.

Research

Sadalla *et al.* (1987) suggest that women are attracted to male dominant behaviour, supporting the idea that aggression in men can increase their chance of reproductive success. Interestingly, though, dominant behaviour may have enhanced their attractiveness, but it did not increase how much they were actually liked. It is possible that this shows that mate preference is based on survival rather than happiness.

Daly & Wilson (1988) found that homicide rates are much higher when a man's wife or partner is about to leave him, or when they have already left. It seems that the fear and jealousy involved in losing a partner can have aggressive consequences.

Goetz *et al.* (2008) looked at men's violence against wives and partners and found that the motivation behind the violence was to punish and try to prevent them sleeping with another man. This ensures that any offspring can be said to be fathered by the partner and the man therefore does not spend time and resources on another man's child. This is further supported by Daly *et al.* (1982), who found that men were violent when they discovered that their wife or partner had been unfaithful.

Evaluation

- There are cultural differences in homicide rates of husbands who kill their wives. If this act was to gain an evolutionary advantage then these rates would be consistent globally. As they are not, it can be argued that there are other factors involved and the aggression between partners is much more complex than the theory suggests.
- Evolutionary theory is difficult to test as much of the research uses a forced option format. This simplifies aggressive behaviour and means conclusions drawn lack detail and a full picture of the reasons behind the aggression.
- The evolutionary explanation for aggression seems to suggest that it is excusable and beyond a person's control. This has important consequences within the legal system and within society generally. It should not be used as an excuse for aggression. This makes the research socially sensitive and it should therefore be conducted with care.

STRENGTHEN YOUR LEARNING

1. What is ethology?
2. Explain what is meant by the term innate releasing mechanism.
3. Explain what is meant by the term fixed action pattern.
4. Give an example of a fixed action pattern that might underpin aggressive behaviour in animals.
5. Explain a weakness of the ethological explanation for aggression.
6. What are the main features of an evolutionary theory?
7. What does evolutionary theory say is achieved by aggression?
8. What roles do jealousy and infidelity play in the evolutionary explanation for aggression?
9. Explain one weakness of the evolutionary theory of aggression.
10. Give an example of some research that supports the evolutionary theory of aggression.

ASSESSMENT CHECK

1 Select from the definitions of psychological terms A, B and C below to complete the table relating to ethological explanations of aggression. One definition will be left over. **[2 marks]**

A A sequence of behaviours that is species specific

B A term used to describe the study of animal behaviour

C A behaviour that allows for a release of an innate drive

Key term	Definition
Ethology	
Fixed action patterns	

2 A research team was investigating the role testosterone plays in aggression in violent criminal behaviour. They measured the level of testosterone in both the offender and non-offender population using saliva samples. Select an appropriate inferential test that could be used to test for a statistically significant difference? Give two reasons for your choice of test. **[3 marks]**

3 Read the item and then answer the question:

The way some men fight if they think someone is chatting up their girlfriend is like two tom cats fighting in the street.

Using your knowledge of the ethological explanation of aggression, explain why this human behaviour seems to be so similar to animal behaviour. **[4 marks]**

4 Discuss the findings of one research study into the role of testosterone in aggression. **[4 marks]**

5 Outline and evaluate the genetic explanation for aggression. **[16 marks]**

13.4 Social psychological explanations for human aggression

The frustration–aggression hypothesis

KEY TERMS

Social psychological explanations – theories that attempt to explain aggression behaviour through reference to social contexts

Frustration-aggression hypothesis – a social psychological explanation that sees aggression arising from emotional reactions to being unable to achieve goals

This theory for aggression is based on the work of Dollard *et al.* (1939). They suggested that aggression is a consequence of feelings of frustration. Frustration is the feeling you experience when you are trying to achieve something, i.e. working towards a goal, and there are barriers (real or imaginary) that are preventing you from realising your aim. It is an unpleasant feeling and needs to be relieved. Aggression, the theorists argue, allows that relief to happen.

An everyday example of this might be someone trying to find a parking space and when they finally do see one, a person coming the other way pulls into it. This leads them to shout abuse at the driver of the car who has taken the space. Dollard *et al.* would argue that the frustration felt by the person trying to park leads them to act in an aggressive manner towards the person who did get the space.

There are various factors that affect the likelihood of aggression occurring:

1 **The proximity to the goal.** If the individual is very close to achieving their goal then the likelihood of aggression occurring is much greater than if achieving the goal is much less imminent or attainable.

2 **Whether the aggression will remove the barrier that is causing the frustration.** If aggression will have no effect on removing the barrier it is less likely to occur. For example, if a piece of machinery breaks, aggression or violence towards it does not help the situation (although this does not always stop people!). However, if the person coming to fix the equipment is slow to arrive, the person waiting may get aggressive with them on the phone if they think it might speed them up.

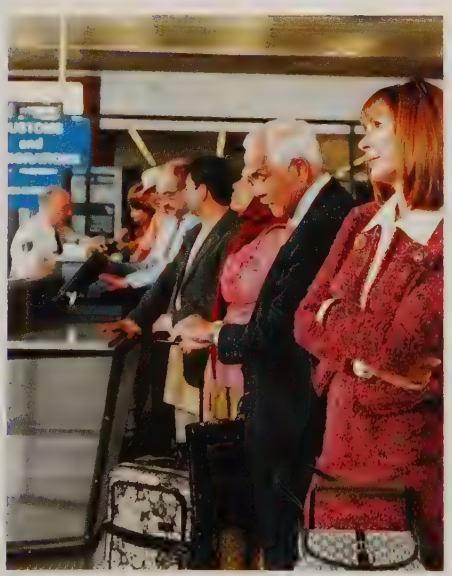


Figure 13.6 Harris found that people towards the front of a queue were more angry if someone pushed in

Research

Pastore (1952) found levels of aggression were higher if the source of the aggression was seen as illegitimate, such as a bus driving by leaving passengers standing at a bus stop, than if it was seen as legitimate, such as the bus driving by displaying a sign saying it was going to the garage. This illustrates how the source of the frustration is key to whether it leads to aggression or not.

Harris (1974) tested to see whether proximity to a goal had an effect on the level of aggressive behaviour shown. She used situations where queues occurred such as shops and her confederates pushed in front of people in the queue. If they were closer to the front of the queue they were more likely to react in an aggressive way than if they were towards the back of the queue. This supports the idea that proximity to achieving the goal is an important factor in whether aggression occurs.

Buss (1963) examined whether different types of frustration would affect the likelihood of aggression occurring. He used three different types of frustration:

1 Failure to win some money.
2 Failure on a task.
3 Failure to get the grade you expect.

He found that all types of frustration prompted aggression and all three types prompted higher levels of aggression than a group that acted as a control group with no frustration, thus supporting the theory.

Evaluation

- Aggression is also not always prompted by frustration. For example, someone may find themselves in a threatening situation and opt for flight rather than fight. This aggression could be seen to be self-preservation rather than frustration. The premeditated and planned aggressive acts of psychopaths and killers are not usually underpinned by frustration either. This suggests that there are other elements to aggressive behaviour.
- Not everyone who experiences frustration reacts with aggression. It is also possible that someone may cry or withdraw rather than become aggressive. They may not feel anger and so react in a different way, reflecting their emotional state.
- Much of the research for this theory is based on hypothetical situations as it is unethical to manipulate someone into feeling frustration and prompting aggression. This means that participants are saying how they think they would act in a scenario. This has low predictive validity because in reality they may act qualitatively differently.

Social learning theory as applied to human aggression

'Aggression only moves in one direction – it creates more aggression.'

Margaret J. Wheatley (2002)

Social learning theory (SLT) believes that environmental influences, rather than genetic influences, underpin behaviour. SLT states that behaviour is learned from observing behaviour of a role model and imitating it. There are cognitive mediating factors which determine whether the behaviour is imitated or not, so behaviour is not imitated automatically. The theory suggests that aggression, like other forms of behaviour, is primarily learned. It does not agree with the idea that humans are born aggressive, and it argues that humans acquire aggressive behaviours in the same way as other social behaviours: through direct experience or by observing the actions of others.

KEY TERM

Social learning theory – a social psychological explanation that sees aggression as learned from observation and imitation of models seen to be vicariously reinforced for their actions

SLT argues that if an individual observes someone rewarded for a behaviour they will be likely to imitate that behaviour. Reward that is observed is called vicarious reinforcement. In the case of aggression, if it becomes associated with a reward through observation (vicariously) the person will be more likely to be aggressive in the future. An example of this would be someone observing a playground bully using threatening behaviour to get money from another student. The aggression has been helpful to them, so the observer might imitate this behaviour in the future.

Social learning makes learning a quicker process as individuals do not need to behave a certain way to understand what the consequences might be. In the case of aggression it means that aggressive behaviour can be observed initially to test the likelihood of reward and then adopted if it appears to be rewarding.

Bandura (1997) acknowledged the role of biology in aggression, but said that social learning was useful for demonstrating when aggression might be used. The social learning therefore informs the observer of the context in which aggression might be expressed.

Behaviour is not automatically imitated. There are mediating cognitive processes which determine whether a behaviour is imitated or not. The processes are attention, retention, reproduction and motivation:

1 **Attention** – this is the initial process which must occur for the behaviour to be learned. The behaviour should catch the attention of the observer and it is perhaps easy to see how this would happen if it is an aggressive behaviour.
2 **Retention** – this follows attention and happens when behaviour is memorable. If it catches the attention of the observer but they do not remember it then the behaviour will not be imitated, so remembering the behaviour is vital to the learning process. Again, aggressive behaviours are more likely to be remembered due to the emotion they evoke. This then means the memory of the behaviour is stored.
3 **Reproduction** – individuals must be capable of reproducing the model's behaviour and thus possess the physical capabilities and skill set needed to imitate the modelled behaviour. In the case of an aggressive act, even if it commands attention and is remembered, the observer must be able to physically reproduce the behaviour. Clearly, if they are not strong or big enough this will not happen.
4 **Motivation** – this is the final mediating cognitive process. It is essential that the observer wants to do the action or behaviour. For aggressive acts it may not be something they are happy doing, so they will not imitate what they have observed, whether it is attention grabbing, memorable or a physical possibility or not. This accounts for the individual differences between people who observe the same behaviour. Some will be happy to imitate it; others will not.

CLASSIC RESEARCH

Bandura, Ross & Ross (1961, 1963)

Bandura, Ross and Ross conducted several studies on the role of learning aggression from observing models. These studies formed the basis for Bandura's social learning theory. Two of these studies are outlined below.

Study one: Bandura, Ross & Ross (1961)

The central apparatus used in these studies was a Bobo doll. A Bobo doll is inflatable and is weighted in the base so that when it is hit it will bounce back up again. The doll was used by Bandura *et al.* to test for aggression in children.

Figure 13.7 Interactions with a Bobo doll

Aim

To test for aggression levels following observation of aggressive behaviour by a model. The term 'model' is used in this context to mean role model.

Procedure

The participants were 36 boys and 36 girls, aged between 3 and 5 years. The participants were divided into equal-sized experimental groups of six children each. Six children formed a control group. The children were brought to the experimental room individually and were invited to play a game as there were toys made available. An adult (the 'model') then entered the room and played with some of the toys.

There were two conditions that followed: aggressive and non-aggressive. In the aggressive condition the models performed aggressive behaviours such as punching the Bobo doll, hitting it with a plastic hammer and kicking it. The models also used verbal aggressive statements such as 'Pow', 'Sock him in the nose!' and 'He sure is a tough fella!' These statements were shouted to increase the perceived level of aggression.

The behaviour of the non-aggressive models was completely different. They ignored the presence of the Bobo doll and played quietly and gently with the other toys.

Prior to the observational part of the experiment the participants were placed in a 'mild aggression arousal' situation, which meant they were put in a room with some toys and allowed to play for two minutes. They were then told they could no longer play with the toys. This was designed to raise their levels of arousal, making them more receptive to observing and acting out aggressive behaviour.

There were both male and female models and the participants were observed in the room via a two-way mirror for 20 minutes after observing the behaviour of the model. Bandura *et al.* proposed that if children were observed to play aggressively with the Bobo doll it would be due to the effects of social learning.

The behaviour of the children in both aggressive and non-aggressive conditions was observed and the number of aggressive acts recorded. The observer was not aware which condition group the children were a member of while observing them to avoid experimenter bias.

Findings

There was a larger amount of aggression observed in children from the 'aggressive condition'. The results were statistically significantly different and this was for both physical and verbal aggression.

In 70 per cent of the children in the control and non-aggressive groups no aggressive behaviour was observed at all.

Both boys and girls were more influenced by the male model, although the level of verbal aggression was greater in girls who observed the female role model. The greater influence of the male model on aggressive behaviour was argued to be due to male stereotyped behaviour.

Conclusions

Bandura *et al.* concluded from the results that children could learn aggression from observing role models.

Study two: Bandura, Ross & Ross (1963)

Aim

To see whether aggressive behaviour could be learned through observation of a film showing aggressive behaviour.

Procedure

The procedure was very similar to study one. However, the two key differences were that the children watched a film rather than live actors playing with the Bobo doll and all the models performed aggressive behaviours. The aggressive behaviour witnessed was on film.

Instead of two experimental conditions as there were in study one, there were three conditions:

1. 'Model-reward' condition – here the model was rewarded for abusing the doll by being given sweets and drinks, and called a 'strong champion'.
2. 'Model-punished' condition – here the model was punished for abusing the doll, being told off for 'picking on the clown'.
3. 'No consequences' (control) condition – here no reinforcement was given.

After watching the video the children were subjected to the 'mild aggression arousal' situation prior to being observed. Then, as in study one, they were taken to a room where there were toys to play with and observed for ten minutes. They were rated for aggressive behaviour in a similar way to study one.

In this study they were also offered a reward for imitating the behaviour they had just observed.

Findings

In the 'model-punished' group there was significantly less aggressive behaviour demonstrated before being offered a reward to imitate the behaviour. Aggressive behaviour was not affected in the same way in the other two groups.

After a reward was offered for responding, children in all three groups then performed the aggressive behaviours to the same extent. Children in every condition learned aggressive behaviours.

Conclusions

The likelihood of punishment is a good indicator for the likelihood of less aggressive behaviours being performed.

Reward for the children also affects the likelihood of aggression being performed but reward for the model does not increase the likelihood.

Aggression seen via the media can have an effect on aggression levels of the audience.

Social learning does occur in children.

Evaluation

(Remember to focus your evaluation on the theory, so if there are flaws with the research then the theory is not as well supported as suggested.)

- The studies show a short-term effect on aggression levels. However, what is not clear is whether social learning can affect aggression levels long term. This was not tested. This therefore weakens the argument that social learning can explain both long- and short-term aggression as a theory.
- The experimental context means that the studies lack ecological validity. A Bobo doll is designed to be hit in a playful way, so this means that the internal validity of the measure could be criticised as the behaviour may have seemed aggressive when the intention was not. This means that the research is potentially flawed and weakens the support for social learning theory.
- The children were deliberately frustrated by the mild arousal situation. The frustration–aggression model states that aggression is more likely to occur if an individual is frustrated while trying to achieve a goal. This means that it could have been the frustration felt that increased the aggression rather than social learning, especially in the second study as all participants displayed aggression. It can be argued that the research actually supports the frustration–aggression hypothesis rather than the social learning theory. This weakens the research base support for social learning theory.

ON THE WEB

Film footage from Bandura's Bobo doll studies can be accessed at YouTube (**www.youtube.com**). It is useful to watch in order to judge a level of aggression. This means you can evaluate the research which then can be used to evaluate the theory.

Research on the media

Pinto da Mota Matos (2011) found that identification with an aggressive model from the television was linked to aggression in Portuguese students, suggesting that the process of social learning affected the level of aggression. This supports the use of social learning to explain some instances of aggression (see Contemporary research, page 575).

Cooper & McKay (1986) assessed video gaming in 9 to 10 year olds, finding that girls were influenced into acting aggressively to a greater extent than boys. This suggests a gender difference in how young individuals react to the social learning of aggression.

Williams (1981) recorded the behaviour of children after the introduction of television to a remote area of Canada. He found that both verbal and physical aggression levels increased. This suggests the media to be a source of aggressive behaviour to children as observers.

Research on environment

Guerra *et al.* (2003) looked at the effects exposure to violence in neighbourhoods could have on children aged 5–12 in terms of the level of aggression they demonstrated. An ethnically diverse sample of 4,458 children living in urban neighbourhoods was tested. It was found that imitation of violence did occur. This suggests that there is a long-term effect on the behaviour of children exposed regularly to violence in their environment.

Bandura (1977) found that people who live in areas with high crime rates have a greater likelihood of committing a violent crime than those who live in low-crime areas. This supports SLT as there was exposure to a greater number of aggressive acts in high-crime than low-crime areas, although other factors, such as stress and poverty, can also affect crime figures.

Evaluation

- Research support is good for the concepts of SLT, and there is also extensive research to support the idea of aggression being learned through the environment. The work by Bandura, Ross and Ross in 1961 using the Bobo doll demonstrated a direct effect of observing aggressive behaviour leading to aggressive behaviour.
- Research into SLT has received criticism as it shows there is an immediate effect on the observer but it does not show whether this continues long term. This means that aggression over a lifetime may not have been learned this way.
- Aggression levels in a community can be affected by the environment as there are communities such as the Mennonites and Amish communities in the USA that are pacifist (peace loving). These communities believe that aggression is wrong and it is therefore not commonplace. This is a belief system, so if aggression was innate it would be likely to override an environmentally determined behaviour. As it does not, such communities provide strong evidence that aggression is learned.
- SLT is a useful theory for explaining why people become aggressive only in certain situations. This could be argued to be because they have only seen aggression reinforced in those specific contexts or because the mediating factors prevent aggression in certain circumstances. If it was due to a biological drive, aggression would not be so situation specific.

De-individuation

De-individuation is a social psychological theory that sees aggression occurring when an individual is part of a group or crowd. It states that aggression is more likely to happen when an individual experiences a loss of their sense of identity. As they no longer feel autonomous as an individual, the morals and beliefs that normally guide their behaviour are loosened and they adopt the morals of any group that they may be part of at that particular time.

It accounts for why someone may become part of an angry mob and act aggressively when they normally would not display this kind of behaviour. An example would be a football fan who gets involved in fights against the fans of the opposing team following a game. This person may not show any aggression for the rest of the week, but because they lose their identity temporarily when they become part of a crowd of fans they start to act with uncharacteristic aggression (see Figure 13.8).

The word 'de-individuation' was first used by Festinger *et al.* to describe this phenomenon in 1952 and there has been much subsequent research examining the idea.

KEY TERM

De-individuation – a social psychological explanation that sees aggression arising from individuals losing their sense of identity and moral controls over their behaviour

Figure 13.8 A football fan who behaves aggressively at a match may not be aggressive outside that situation

This idea is not new. Work by Le Bon in 1895 examined how behaviour can change when an individual is in the crowd. He looked specifically at 'mob violence' during the French revolution and observed that people who were unlikely to act with violence in everyday situations became capable of violence and aggression when they were part of a mob. It could be argued that this is a unique property of a crowd, but Le Bon argued that it was necessary to look at the individual level to explain why this happened. He felt that the person loses their identity when they are mixed up among a crowd and their normal moral code does not apply. The larger the crowd, the greater the likelihood of this sense of identity being lost and therefore the more likely that aggression could follow. Their self-control and impulses that are normally moderated by internal standards rise to the surface. It was this behaviour that was examined further by Festinger.

However, there are psychologists who believe that crowd behaviour occurs for more complex reasons. Zimbardo (1970) claimed that in addition to losing anonymity there are the influences of drugs/alcohol, a reduced sense of responsibility and sensory overload. The influence of a crowd can have various effects on an individual's behaviour.

The idea of de-individuation was refined further by Diener in 1980. He felt that de-individuation was mediated by self-awareness. When someone is in a non-crowd situation their self-awareness acts as a regulator of their behaviour. However, in a crowd situation, the focus is outward, as there is lots of stimulation to attend to. This shifts the focus outwards and their self-awareness declines. This means that the regulator of behaviour is weakened and uncharacteristic behaviour is likely to occur.

This occurs, for example, at a sporting event. Not only does the individual have the stimulation from the crowd around them, but also, more often than not, they are focusing on a game and so self-awareness is diminished. This makes uncharacteristic behaviour such as aggression even more likely.

There are two types of self-awareness put forward by Prentice-Dunn & Rogers (1982): *public self-awareness* and *private self-awareness*. Public self-awareness is concerned with the appraisal of other people whereas private self-awareness is the awareness of one's own thoughts and feelings. Both of these can be affected by a crowd. In the case of public awareness the number of people appraising an individual is multiplied. There is also a feeling of diffusion of responsibility, so the focus is less on being responsible for one's own behaviour and a feeling that responsibility is shared by those around you. In general, the inhibitions that would normally moderate your behaviour lose their effect. With private awareness the decline in self-awareness occurs because the individual is simply distracted by the crowd. They 'lose' themselves. There are many environmental cues to focus upon and an individual prioritises those rather than focusing on themselves.

The result of this lack of self-awareness is de-individuation, which in turn leads to de-individuated behaviour, behaviour that is affected by the crowd rather than internal standards. De-individuation can also occur when the identity of the individual is hidden in some way. This type of de-individuation is less likely to lead to aggressive behaviour as there is still self-awareness and no distraction from being part of a crowd. However, research has shown that when someone's identity is hidden, their behaviour becomes less moral and they are more likely to cheat and act more selfishly (Zhong *et al.*, 2010). This illustrates that identity is key to mediating behaviour.

Research

Postmes & Spears (1998) conducted a meta-analysis of 60 research studies, finding that evidence for de-individuation was weak. The effects stated by de-individuation theorists were not widespread across all types of crowds, lowering support for the concept.

Hirsh *et al.* (2011) found that, when in darkness, individuals experience de-individuation, but that this could lead to prosocial as well as aggressive behaviour. A similar effect was noted when participants had drunk alcohol. Overall, the findings suggest that de-individuation does not necessarily result in negative, aggressive behaviours.

Ingham (1978) argues that it is not de-individuation that causes violence at football games. Football supporters follow rituals set within the group and it is these group norms, not de-individuation, that influence behaviour.

Evaluation

- There seems to be little argument that being in a crowd affects an individual's behaviour. However, the exact reasons behind this transformation are unclear and there appear to be many factors involved. It may be that the factors affect individuals differently, but with the same resultant behaviour.
- As de-individuation can occur in darkness, a practical application of research is to ensure areas are well lit. This will ensure that the sense of personal responsibility is not lost and that the likelihood of antisocial behaviour occurring is lowered. CCTV can have a similar effect, as people are often aware that they can be seen and identified. This will make them more accountable for their behaviour.
- It is possible that aggression occurs due to the anonymity of the victim rather than the loss of identity of the individual. Attacks on strangers do occur, so it could be that anonymity is an important factor in aggressive acts.
- De-individuation can only explain aggression that relates to specific contexts (i.e. where de-individuation can occur). Aggression does, however, occur outside these contexts so the theory can be seen to have a narrow application.

STRENGTHEN YOUR LEARNING

1. Who is a key theorist in the frustration–aggression hypothesis?
2. Explain what is meant by the frustration–aggression hypothesis.
3. Give one example of supporting research for the frustration–aggression hypothesis.
4. Explain how social learning theory can explain aggression.
5. What are the four mediating cognitive processes?
6. Give an example of how the mediating cognitive processes may stop an aggressive behaviour being imitated.
7. Explain a weakness of the social learning explanation for aggression.
8. Describe how de-individuation theory explains aggression.
9. Explain a weakness of the de-individuation theory for aggression.
10. Give an example of some research that supports the de-individuation theory of aggression.

ON THE WEB

The documentary 'Football hooligans and proud', shown by Channel 5, can be accessed at the Channel 5 website:

https://www.channel5.com/show/football-hooligan-proud/

It contains interviews with self-confessed football hooligans and offers some insight into why they do what they do.

ASSESSMENT CHECK

1 Select from the descriptions of cognitive processes A, B, C and D below to complete the table relating to mediating processes below. One description will be left over. **[3 marks]**

A An aggressive behaviour is remembered

B An aggressive behaviour is noticed

C An aggressive behaviour will help achieve an aim

D An aggressive behaviour is possible

Mediating cognitive process	Description of mediating cognitive process
Attention	
Retention	
Reproduction	

2 A research team was examining the role time of day had on aggression. Two psychologists observed behaviour of selected children in the playground in both the morning and afternoon. They used behavioural categories to categorise and tally the behaviours.

Outline how the researchers could check for reliability of the observers' data **[2 marks]**

3 Read the following item and then answer the question:

Road rage in traffic jams is a problem; it can sometimes lead to arguments and fights between drivers.

Using your knowledge of the frustration–aggression explanation of aggression, explain why such arguments and fights may occur. **[4 marks]**

4 Discuss the findings of one research study into the social learning theory of aggression. **[4 marks]**

5 Outline and evaluate the de-individuation explanation for aggression. **[16 marks]**

13.5 Institutional aggression in the context of prisons

Aggression in prisons is a problem. In a report by the Prisons Inspectorate (the organisation that inspects prisons) into Feltham Prison in 2013, there was serious concern raised by the number and severity of violent acts every day. Feltham is a young offenders' institution, which is split into under 18s and young adults. It is acknowledged to be the most violent prison in the UK, with 300 acts of violence recorded in the six months prior to the report. That is about two a day. Those are the major incidents. The minor ones are unlikely to all be documented, so that statistic is, in reality, probably higher.

There are two main theories as to why aggression occurs in prisons at a higher rate than in the high street. These are the **situational model** and the **dispositional model**. Each looks to different sources of the aggression. The situational model attributes the aggression to the situation, and the idea that it is prison conditions and deprivation that are the issue. The alternative dispositional model focuses on the characteristics of the prisoners themselves, arguing that they are violent and aggressive people and therefore bring the aggression into prison with them.

Dispositional explanation

Importation model

Irwin & Cressey (1962)

The **importation model** suggests that prisoners import their aggressive tendencies into prison with them and this is why the rate of violence is high. These aggressive characteristics may come from sources such as genetics, testosterone and serotonin levels and learned history from, for example, their background. Therefore the aggression that is evident in prison is no different to how the offenders act when they are in their home environment. It is therefore important to consider offenders' behaviour out of prison as well as inside an institution.

There are often factors that affect the offender both inside and outside of prison. An example of this is dependency or addiction to substances such as alcohol and illegal drugs. These can exacerbate aggressive behaviour and are not necessarily sorted out by putting someone in prison. It is also notable that the most violent prisons in the UK are young offenders' institutions. In the report by the Prisons Inspectorate that identified Feltham as the most violent prison it was also young offenders' institutions elsewhere in the country that came second and third.

The Prisons Inspectorate noted that there was a problem with gang culture in young offenders' institutions. This is likely to be an influence from the 'outside' and the offenders had encountered the gangs in their home environment.

KEY TERMS

Institutional aggression – acts of intimidation and violence performed within prison settings

Situational model – an explanation that sees institutional aggression as occurring due to the environmental conditions within a prison setting

Dispositional model – an explanation that sees institutional aggression occurring due to the characteristics of individuals within a prison setting

Importation model – a dispositional explanation that sees prisoners as bringing their usual high levels of aggression into a prison setting

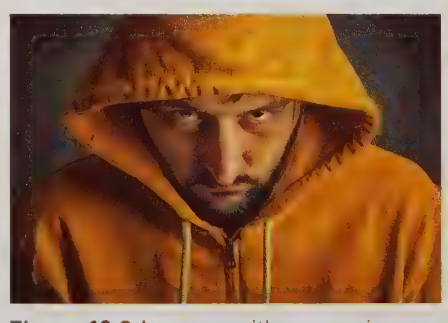


Figure 13.9 A person with aggressive tendencies will display them in prison as well as at home

There are three prison sub-cultures that influence inmates (Irwin & Cressey, 1962):

YOU ARE THE RESEARCHER

It would be useful to know which sub-culture any inmate belonged to as it may help prison authorities work out which prisoners may be more aggressive. Think of some items you could include on a questionnaire to test membership of sub-culture. What would be problematic using such a method of classification?

1. **Criminal/thief sub-culture** – this advocates a criminal 'code of honour', such as not telling on fellow inmates when they have committed a misdemeanour in prison. This sub-culture promotes honour, trust and loyalty as its key values. The members of this sub-culture will be hardened criminals, repeat offenders who re-enter the prison knowing that they will act this way. There is aggression within this group but it is not as dominant as in the 'convict sub-culture'.
2. **Convict sub-culture** – this has a strong power hierarchy. Much of the behaviour within this sub-culture is about position within the hierarchy and power. This group is the most likely to become aggressive as this is deemed necessary to exercise power over other inmates. Prisoners opting to join this sub-culture are often from deprived areas outside of prison and familiar with gang culture.
3. **Conventional or 'straight' sub-culture** – the individuals who are members of this sub-culture will be new to prison and probably likely to be one-time-only offenders. They will try to keep clear of the other two sub-cultures and have more in common with the prison guards. These prisoners are not generally aggressive.

These sub-cultures show how, in addition to personality characteristics, the background and learned history of a prisoner can affect whether they are likely to be aggressive and violent when put in prison.

Research

Jiang & Fisher-Giorlando (2002) looked at the extent to which the importation model could explain prison violence. They also compared the explanatory power of the theory with the influences of deprivation and the prison environment. They concluded that the explanation was most useful in explaining violence against other inmates whereas the prison context was more useful for explaining violence against prison staff. This suggests the importation model has some validity but only in some instances.

Kane & Janus (1981) found that the number of violent offences was related to the learned history of the offender. If a prisoner had previously had a lower level of education, a more serious criminal record and more time unemployed in their life then they were more likely to be aggressive and violent once put in prison. This is a clear indication of how the violence may have been imported due to the offender's previous experience.

Kane & Janus (1981) found that younger offenders and non-white prisoners were more likely to be aggressive while in prison. This could be due to the influence of gang culture and/or the marginalisation of ethnic groups, which supports the idea that outside influences imported into prison affect aggression levels.

Evaluation

A strength of the importation model is that it looks at prisoners in a more idiographic way rather than saying they are all the same. The work on sub-cultures is nomothetic to some degree, but the theory is essentially arguing that the effects of experience and predisposition are individual and therefore can explain well why some offenders are violent and others are not.

The importation model suggests that rehabilitation should consider the home environment of an individual. This means that aggression could be dealt with by such programmes as anger management which reduces chances of recidivism (reoffending).

DeLisi *et al.* (2004) found support for the importation model originating from gang culture. They studied the prison records of 831 US male inmates, assessing the relationship between prison violence and membership of street and prison gangs. They found a significant relationship between gang membership and prison aggression. This suggests that gang membership values are imported into prisons by gang members. This is further supported by the Prisons Inspectorate report of the violence in Feltham young offenders' institution (see page 569). They witnessed gang graffiti throughout the inmates' cells, suggesting very few inmates were not gang members.

However, the influence of gang culture does not explain aggression in adult prisons so well. Poole & Regoli's (1983) study found that pre-institutional violence is the best predictor of inmate aggression in juvenile correctional institutions. This finding was not replicated in adult prisons in other studies and therefore cannot be generalised to explain aggression in all institutions or to support the importation model.

PSYCHOLOGY IN THE REAL WORLD

Prison solves problem of illegal mobile phones

The use of mobile phones in prison is banned. This is for obvious reasons, as it is a method of conducting 'business' (i.e. criminal activity) from within the prison walls. However, the lack of access to a phone can cause issues for inmates as they wish to contact loved ones, but often the number of landlines provided is insufficient to meet demand. This adds to the need to have access to a mobile phone in prison and consequently phones are smuggled in. The frustration felt by prisoners who cannot talk to family and friends can lead to violence, and reports from inmates and prison officers pinpoint frustration at being unable to contact family as being a precursor to violence.

Lowdham Grange, a prison in Nottingham, has installed landlines in the cells in the institution and prisoners can make calls at any time of the day. There is a restriction on the numbers allowed, however, and if they wish to make a call to a number it has to be checked first. There are only a few numbers permitted on each phone. This is an attempt to ensure phone calls are made only to landlines of family members.

The scheme has been well received. Statistics show that the prison is now safer as a consequence of this action.

This is an example of how situational factors such as deprivation of access to phones can be dealt with by the prison service and this has the welcome effect of reducing aggression and violent acts as a consequence.

Figure 13.10 Prisoners are not allowed mobile phones during their incarceration

Situational explanation

The prison context can also be regarded as a potential source of aggression. There are three specific types of factors that come from the environment within a prison:

- **Organisational** – this is the influence of rules and regulations that prisoners have to adhere to while serving their sentence. These can prompt aggression because of the expectation that all prisoners must follow them.

- **Physical** – the potentially cramped conditions, threatening environment and lack of comfort are argued to be factors in influencing aggressive behaviour.
- **Staff characteristics** – the attitude and behaviour of the staff can be influential in prompting aggression in inmates. For example, there could be a clash of personalities or an unwillingness of an offender to adhere to prison rules, eliciting a negative reaction from staff. These could lead to aggression against the staff or others.

Deprivation model

KEY TERM

Deprivation model – a situational explanation that sees institutional aggression arising through the loss of prisoners' key needs in a prison setting

The **deprivation model** is an example of how the prison environment can increase aggression in offenders. It relates to the organisational and physical indicators detailed above.

The deprivation model sees the loss of key needs, such as frequent communication with loved ones outside of prison, as being the root to aggressive behaviour.

Sykes (1958) suggested that deprivation within prison could prompt aggression. It was argued that there were five types of deprivation that could influence behaviour: deprivation of liberty, deprivation of autonomy, deprivation of goods and services, deprivation of heterosexual relationships and deprivation of security. These were all factors in affecting behaviour and due to these factors, negative aggressive and violent behaviour increased.

These five deprivations are all detailed below:

YOU ARE THE RESEARCHER

If you were a prison psychologist you might be asked to research which of the five deprivations is most likely to trigger aggression in your prison. How would you do this? Try to think of a qualitative and a quantitative method. Which would be most reliable? Which would be most valid?

1. **Deprivation of liberty** – for some, this is seen to be the purpose of prison. It is meant to impinge on the liberties of the offender and during their sentence they are no longer allowed to go where they please, when they please. However, Sykes (1958) argued that this reinforced the feeling of rejection from society and so offenders became more likely to be antagonistic and aggressive.
2. **Deprivation of autonomy** – there is no independence for prisoners. They are expected to conform and they have no control over their day-to-day living. Even small choices such as choosing when to eat (that we take for granted in the non-prison environment) are not possible in prison. Inmates experience a feeling of helplessness and this, in turn, can lead to frustration and aggression. There is also a withdrawal of privileges from time to time which is often not explained to the inmates, so they feel angry and powerless.
3. **Deprivation of goods and services** – access to goods is severely restricted within prisons. A modern-day example is access to mobile phones. This is prohibited and for most of the prisoners who used their mobiles extensively before entering prison the lack of access to a phone causes anger and resentment, which leads to violence (see Psychology in the real world: Prison solves problem of illegal mobile phones).
4. **Deprivation of heterosexual relationships** – a heterosexual prisoner has no access to companionship in prison and this can lead to frustration and consequently aggression. This is seen as a need for some, but it is not just the deprivation of the chance for sex that is the issue. The ability and need to form relationships and experience emotional intimacy with a person of the opposite sex are important. Withdrawal of this access, like the other deprivations, is argued to lead to increased violence.

5 **Deprivation of security** – the prison environment does not feel safe for most prisoners – they fear for their personal safety. This feeling of fear can lead to heightened awareness and defensiveness, which could make overreaction to incidents more likely.

All these potential areas of deprivation can be related theoretically to an increase in aggression in prisoners.

Research

Lahm (2008) found in her research into inmate-on-inmate violence that both situational and dispositional factors played a part in prison violence. She looked at the incidences of violence experienced by 1,054 inmates across 30 prisons and found that the main predictors of violence were age and aggression level. These would seem to suggest that the importation model is the most powerful for explaining violence. However, she found that the level of overcrowding also played a part, so it seems that situational factors are important, too.

Blomberg & Lucken (2000) found research evidence to support the idea that a lack of autonomy can contribute to aggression. In their research they found that prisoners often had to seek permission to perform acts such as eating and washing, which are key civil liberties. This leads to frustration and the deprivation of autonomy could therefore be a key factor in increasing aggression.

Cheeseman (2003) found that aggression in prison acted as a way of relieving stress due to the situation prisoners found themselves in. The frustration–aggression hypothesis can be applied here, where violence acts as an outlet for frustration. As the frustration is prompted by the situation inmates find themselves in, this can be argued to support the situational model.

Johnston (1991) also found that prison overcrowding leads to increased aggression. This means there is greater competition for the resources available. This competition elicits aggression and violence is an inevitable consequence of that aggression. The formation of gangs to help compete for resources fosters in-group/out-group conflict, leading to group aggression. These are all argued to be situational factors and therefore support the situational model.

Evaluation

- Maslow's hierarchy of needs (see page 236) supports the idea that the situational effects in a prison could lead to aggression in inmates. The first step on the hierarchy, the physiological needs, cannot be met all the time due to the enforced regime of sleeping and eating and also the lack of opportunities to fulfil sexual needs. The safety needs are also not possible due to the lack of perceived safety within prison. This means that the drive to self-actualisation is prevented at the basic levels and can therefore lead to negative behaviour.
- In a modification of Zimbardo's prison study, Haslam & Reicher (2006) reported that it was not the adoption of the prisoner role that affected behaviour, it was the need to be part of a group. This suggests that the prison situation, which enforces the need for group behaviour to aid access to resources, is the reason behind the increased level of violence.
- Prison riots can both support and refute the situational model. They can occur when there has been a withdrawal of privileges or a lack of explanation as to why the daily routine has changed, but they can also flare up with apparently no reason whatsoever. This means the situational influence in violent behaviour cannot always be identified, or may not exist.

The case for interaction

The research by Jiang & Fisher-Giorlando (2002) previously reported in the importation model research section illustrated that perhaps both types of influence, importation and situational, play a part in aggression. Their research picked up on the fact that it depends on who the aggression is directed towards that indicates which theory might explain the act better. Aggression towards fellow inmates seemed, in the research, to be better explained by the importation model and aggression towards prison officers seemed influenced to a greater extent by situational factors. It is not clear why this may be the case, but teasing apart the two possible sources of aggression is not easy. It seems likely that both contribute in differing amounts depending on the individual act.

STRENGTHEN YOUR LEARNING

1 Explain what is meant by the dispositional explanation of aggressive behaviour.
2 How does the importation model explain aggression in prisons?
3 Give an example of research that supports the importation model of institutional aggression.
4 Explain one weakness of the dispositional explanation of institutional aggression.
5 Explain the situational theory of institutional aggression.
6 What are the main areas of deprivation argued to underpin institutional aggression?
7 Explain how deprivation can lead to aggression.
8 Explain a weakness of the situational explanation of institutional aggression.
9 Describe one research study that supports the situational explanation.
10 Explain why interaction might be the best explanation for institutional aggression.

13.6 Media influences on aggression

'Video games are bad for you? That's what they said about rock 'n' roll.'

Shigeru Miyamoto (1993)

KEY TERMS

Media influences – public forms of communication that might affect aggressive behaviour

Effects of computer games – the influence of playing computer games upon aggressive behaviour

The media has come under scrutiny as a possible source of prompting aggression. Media includes many possible channels, such as films, television and computer games. Computer games as a source of aggression are discussed in more detail in the following section.

The effects of computer games

The first computer game was developed in 1958 and was an electronic tennis game for two players. However, it was not until the games became commercially available that the impact was researched. This was in the 1970s.

The primary concerns with regard to aggression were that exposure to violence in the games may have a desensitisation effect and that the people playing the games may receive positive reinforcement from using violence. It is perhaps a worry that this may reinforce violent behaviours in everyday life.

There is also the potential for exposure to violence affecting the moral judgement of those playing the games. They may not see it as inappropriate or wrong to use violence. Conversely, there is the argument that playing computer

games is beneficial to the individual and society. A video game may provide an outlet for anger and relieve stress. The term for this effect is 'catharsis', which is a psychodynamic term describing the purging of strong emotion. In the example of computer games they would act as an outlet for anger.

CONTEMPORARY RESEARCH

Television and aggression – Pinto da Mota Matos, Alves Ferreira and Haase (2011)

Armanda Pinto da Mota Matos, Joaquim Armando G. Alves Ferreira and Richard Haase collaborated to examine the various factors that may contribute to media violence and the relative contribution to violence in children. There are many ways that the media can influence behaviour but finding out which, if any, is the most influential is problematic. This is what Pinto da Mota Matos et al set out to do.

Aim

To examine the roles of identification with violent TV heroes, enjoyment of TV violence and perceived reality in TV violence in subsequent aggression in children.

Procedure

722 students (353 boys and 369 girls) aged 9–16 years old were participants. They all came from schools in the centre of Portugal.

Data on variables such as age, socioeconomic status and school year was collected. In addition, the following measures were used:

Exposure to TV violence: children received a list of 23 genres of programmes and were asked to indicate how often they watched that particular type of genre on a four-point scale from Never to Always.

Aggression: children filled out a 20-item questionnaire called the 'Questionnaire of Aggressive Behaviour'. Each item was a hypothetical scenario, such as: 'You're in line for a glass of water. Some kid comes along and pushes you out of the line. What do you do?' For each scenario the participant was asked whether they would respond in a physically violent manner (would you hit him? Yes/No) or a verbally aggressive manner (would you yell at him? Yes/No).

Enjoyment of TV violence: children were given a questionnaire called, unsurprisingly, the 'Scale of Enjoyment of TV Violence'. It had 18 items asking them to indicate how much they enjoyed watching TV violence. The response scale was a four-point scale from I don't agree at all to I completely agree.

Perceived reality in TV violence: this was assessed too using a questionnaire with eight items. Four were about fictional programmes and four were about realistic programmes such as police shows. The participants were asked to rate how similar to real life these programmes were.

Identification with violent TV heroes: this was assessed by asking just one question to each participant: 'Who would you like to be if you could be a television character?' As this was after the age of eight this was testing their wishful thinking rather than their judgement on similarity, which is how younger children would respond. The character chosen by the participant was then rated by the researcher on a three-point scale from not aggressive to very aggressive.

All these measures were statistically analysed by the researchers to see how the factors were all related.

Findings

The relationship to physical aggression was influenced by enjoyment of TV violence, perception of reality and identification with violent TV heroes.

The relationship to verbal aggression was mediated by enjoyment of TV violence but not by perception of reality and identification with violent TV heroes.

Children who watched more TV violence tend to identify with violent TV characters and show more physical aggression.

Overall there was a direct link between the exposure to TV violence and aggression (physical and verbal).

Conclusions

It can be concluded that exposure to TV violence is linked to aggressive behaviour and that there are several factors involved.

The identification with violent TV heroes supports the idea that social learning is a mechanism by which aggression can be imitated. The presence of a role model who is violent via the media does seem to indicate that children are influenced into taking the aggressive option in some contexts. This shows a more long-term link from social learning to aggression than the Bobo doll study (see page 563) demonstrates.

The fact that perception of reality of TV programmes is negatively related to aggression would also suggest that disinhibition could be occurring. Disinhibition (see page 578) is the feeling of being lost in the media, which then means an individual is more likely to act in an uncharacteristically aggressive way. If an individual's perception of reality is low then disinhibition is more likely to occur and influence the level of their aggression.

Evaluation

- Some of the measures involve hypothetical scenarios, which means the responses may not be typical of how the individual would act in everyday life. This means the predictive validity of some of the measures may be poor.
- The research is correlational, so cause and effect cannot be established, merely a relationship. This means that identification with a TV character and perception of reality are linked to aggression, but the psychological processes underlying that link are not tested in the research.

RESEARCH IN FOCUS

Aggression is often measured in research through questionnaires. What are methodological issues with this?

Measuring aggression using a questionnaire format is clearly ethically the best way, but what other ways could be used to operationalise aggression in research?

Research

Ballard (1999) reports that the relatively recent development of new technology to enhance computer game experience such as a virtual world simulation may increase the emotion felt by the player. This may increase the likelihood of aggression.

Matthews *et al.* (2006) used brain scans to find that adolescents who played violent computer games had decreased activity in the prefrontal lobe, which is associated with control, and increased activation in the emotion-centred areas of the brain such as the amygdala. This suggests violent computer games increase emotion and decrease control, which may lead to aggression.

Anderson & Bushman (2001) conducted a meta-analysis of studies measuring the relationship between exposure to violent computer games and aggression. They found that short-term exposure to video game violence was associated with temporary increases in aggression, which suggests playing violent video games leads to aggression, though long-term effects were not studied.

Kestenbaum & Weinstein (1985) found that playing computer games helped adolescent males to release aggression and feel calmer. This suggests that video games are cathartic in allowing a socially acceptable outlet for aggressive feelings experienced by this age group.

Evaluation

The source of research seems to affect findings, which suggests research in this area is not objective and should be treated with caution. This was supported by Harris (2001), who reported that research conducted by the gaming industry found no relationship between video game violence and aggression.

Cause and effect is difficult to establish in research. It is possible that any positive correlation between aggression and exposure to violent computer games is due to aggressive people choosing to play violent computer games as opposed to non-violent games.

Most research examines the short-term effects of playing a violent computer game and therefore it is not clear how long the effect could last for. This has obvious implications for legislation.

It can be argued that the effects do not affect all people equally. Young children who are still impressionable and are still developing their moral code may be more affected than adults.

Aggression, hostility and desensitisation are all difficult constructs to measure. Inevitably self-report measures must be used due to ethical constraints and therefore the predictive validity and reliability of the measures is questionable. This has the effect of casting doubt over the validity of the findings in this area.

The role of desensitisation

Most people can remember watching horror films when they were young and being profoundly affected by what they saw. If they sit down to watch the same films when they are older they are often surprised by how tame the film appears. Psychologists call this **desensitisation** as the more someone is exposed to media that provokes fear, the less they are affected by that media. Their emotional response is reduced through repeated exposure.

Desensitisation works in the same way with violence in films. People habituate (get used) to the level of violence and their emotional, cognitive and behavioural response is reduced. This means that when exposed to violence it prompts less of a response and the behaviour does not seem as bad as it would have done prior to desensitisation. Continual use of a computer game that exposes the player to violence can therefore reduce the impact and revulsion they may have for such violence. In theory, this then makes them more likely to act in a violent way because they have a reduced emotional reaction to it.

Research

Drabman & Thomas (1974) found that children became more tolerant of violence in films as the amount of violence they watched increased, supporting the idea of a desensitisation effect.

Bushman (2009) found that when individuals playing violent video games for only 20 minutes saw someone injured in a fight, they actually took longer to help than individuals playing non-violent games. This suggests that they were desensitised, as the fight did not seem to affect them emotionally as much as participants not exposed to violence.

Belson (1978) assessed the number of hours spent watching TV and anti-social attitudes of 1,500 teenage boys. No significant relationship was found between exposure to violence and anti-social behaviour, thus weakening support for the concept of desensitisation.

Evaluation

- Research evidence is mixed. Some indicates a desensitisation effect, while other research finds no link. This means that the link between exposure to media violence and desensitisation may be more complex than originally thought.
- The fact that repeated exposure to violence in the media may provoke a diminished emotional response could mean that violent and aggressive behaviour may be less likely to occur. If someone has a lower level of arousal to a violent stimulus then it can be argued they may be less inclined to respond in a violent way. Violence and aggression are usually underpinned by high emotion.
- It is hard to establish a connection between media exposure and desensitisation. Media exposure is widespread and yet we are not all affected equally. Individual vulnerability in terms of level of emotion experienced may explain why some people are more desensitised than others.

YOU ARE THE RESEARCHER

You have been given the task of investigating the effect computer games have on aggression levels in 11–14 year olds using an experimental design. What would your IV be? What would your DV be?

How could both these variables be made as reliable as possible?

KEY TERM

Desensitisation – habituating to the violence seen in the media so that when it reoccurs at a similar level it has no emotional effect

Figure 13.11 Horror films that seemed scary as a child might seem tame as an adult

The role of disinhibition

KEY TERM

Disinhibition – the impression of being caught up in media forms of aggression and thus behaving in a non-typical hostile manner

Disinhibition means that uncharacteristic behaviour for the individual is demonstrated when playing a game. Ordinarily an individual would not act that way, but when in the virtual world of computer gaming a disinhibited person will act in a non-typical way. This could include displaying aggressive behaviours which are more intense than they would normally be. It can be argued, therefore, that playing a computer game may incite violence in someone who is a passive person in everyday behaviour.

This disinhibition effect when on a computer can be explained in several ways (Suler, 2004):

1 **Anonymity and invisibility** of the person is assured while playing a computer game. This means that responsibility for behaviour is perceived as reduced. This is a similar effect to de-individuation when an individual cannot be recognised because they are in the dark or their identity is obscured in some way (see page 565).
2 **Solipsistic introjection**, which is the feeling of becoming cognitively merged with the actor in the game. This occurs when an alter is selected to act within the virtual world and by playing as that alter the gamer becomes part of the alter. Therefore uncharacteristic behaviour may occur because the individual is not acting as himself/herself.
3 **Minimisation of authority** occurs in computer games as there is often no law enforcement or awareness of potential legal consequences as there might be in everyday life. This means that behaviour which would be classified as criminal is acted out as it is a virtual world.

Research

Bandura, Underwood & Fromson (1975) examined the interaction between the dehumanisation of a person and reduced responsibility for an action (as would occur in disinhibition when playing computer games). They found that disinhibition in terms of responsibility prompted more punitive behaviour from participants and that the more dehumanised the person was, the more punitive the behaviour displayed by participants was. This suggests that when there is a diminished sense of responsibility, more aggressive behaviour can occur. However, the fact that opponents in computer games may not be human means that the raised level of aggression witnessed may be due to dehumanisation rather than disinhibition.

Josephson (1987) compared the effects of priming, social scripts and disinhibition. She put boys in groups of six to watch violent or non-violent television. The violent television was an ice hockey game. She also measured aggression levels by naturalistic observation. Priming was prompted by cues associated with violence. She found that violent television and violent cues prompted higher levels of aggressiveness but only really in boys who were rated as normally aggressive by their teachers. The boys who were not rated as aggressive displayed low levels of aggression in the violent programme and priming conditions, potentially suppressing any aggression felt. This seems to suggest that a disinhibition effect did not occur as behaviour remained typical in both groups of boys. It is therefore possible that disinhibition occurs only in a computer-based context and not in other media contexts.

Pinto da Mota Matos and Haase (2011) found that perception of reality of TV programmes is negatively related to aggression. This suggests that disinhibition could be occurring, supporting the theory. (See page 575 for details of the study.)

Evaluation

- It is likely that not all forms of media will evoke feelings of disinhibition and there is a bias in the research towards disinhibition in playing computer games. This suggests that disinhibition may apply only to certain forms of media and that the strongest effects are found in computer gaming.
- Effects from disinhibition seem to be contained in time to the period while playing the computer game. This means that the effect is relevant only while engaging with the media and that the effect is negligible while away from the computer game medium.
- The extent to which someone may become involved in the media they are experiencing will vary. So, disinhibition may occur only in people who are fully engaged in playing and are not easily distracted by external stimuli (for example, introverts). This narrows the number of people who can be affected this way. Applicability of the research is therefore not widespread.

The role of cognitive priming

Cognitive priming is the idea that we may be exposed to cues on television or on computer games and that these cues can trigger behaviour in us. These cues can be anti-social, such as an aggressive act, or pro-social, such as helping behaviour. The effect of cognitive priming is therefore potentially immense. Many of us watch television regularly and play computer games, so there is exposure to cues on a daily basis. However, the effects of these cues are moderated to some extent by context. We do not blindly act out what we see and the cues will act as triggers only if the context is similar, which it rarely is.

It is possible that cognitive priming works in a more general sense to influence attitude and behaviour towards being pro- or anti-social. So, for example, we may watch an awards ceremony where people receive acknowledgement for the work they do helping others. This may inspire us, for a short time at least, to act compassionately. Conversely, the same can be said with anti-social programmes, in that they could have a negative effect on our behaviour and we may display more aggressive behaviour.

KEY TERM

Cognitive priming – the effect of media cues in prompting aggressive behaviour

Research

Anderson, Anderson & Deusser (1996) investigated the effects of the environment and cognitive priming on aggressive behaviour. They used images of guns as priming stimuli and varied the temperature of the room between hot, comfortable and cold. Aggression was measured by questionnaire, looking at hostile attitude and hostile thought. Interestingly,

they found there were different effects on the hostility measures. Extreme temperatures increased the overall general hostility of mood and attitude and being shown images of guns actually primed hostile thoughts. This seems to suggest that the presentation of a cue can trigger a negative thought, but that the overall effect is short-lived and it does not affect the attitude or mood of the individual.

Murray *et al.* (2007) assessed fMRI brain scans of children watching violent and non-violent films, to find those watching violent films had increased activity in brain areas associated with emotion, together with areas linked to personal memories. This suggests that memories were formed which could later react to cues and prompt aggressive or violent behaviour, supporting the idea of cognitive priming.

Holloway *et al.* (1977) found that participants who 'overheard' a pro-social message on a radio in the waiting room before participating in a study involving bargaining were more co-operative in their bargaining than participants who did not hear the bulletin. This suggests a pro-social effect of the cognitive priming of good news.

Moriarity & McCabe (1977) found that children who witnessed sportspeople behaving pro-socially actually performed more pro-social acts themselves than those who did not see the sportspeople acting in a pro-social way. However, the children did not imitate the same behaviours, they just acted in a more pro-social way, which suggests that the effects of cognitive priming are not behaviour specific but do influence general conduct.

STRENGTHEN YOUR LEARNING

1. Give one example of research that demonstrates an increase in aggression when playing computer games.
2. Explain why computer games could be argued to decrease aggression.
3. Explain what is meant by desensitisation.
4. Explain how desensitisation might be argued to reduce aggression.
5. What is the difference between desensitisation and disinhibition?
6. Which type of media is most likely to induce disinhibition?
7. How can the disinhibition effect be explained?
8. With reference specifically to aggressive behaviour, what is meant by the term cognitive priming?
9. Describe one piece of research that supports the idea of cognitive priming affecting aggressive behaviour.
10. Explain one weakness of the cognitive priming theory of aggression.

Evaluation

The research is mixed with regard to whether specific or general behaviours are affected by cognitive priming. There does seem to be an effect, but exactly how specific it is is unclear.

It may be that cognitive priming has an effect on someone only if they have a predisposition to a certain type of behaviour due to their personality. The effects are likely to be subtle, so changing an aggressive individual into someone who is pro-social is unlikely with cognitive priming.

The idea of cognitive priming can be seen to be simplistic. Social learning occurs only if the mediating processes are conducive to imitating a behaviour. It is likely that this is similar with cognitive priming, with the motivation, degree of impression and suitable context all being factors which mediate the effect the cue has.

It is hard to establish cause and effect with cognitive priming. In general, it is true that the more violence someone is exposed to in the media, the more likely they are to be aggressive. However, this is correlational and therefore we can only establish that the two factors are related. It is possible that aggressive and violent people choose to watch more violent programmes, not that the violent programmes cause the violent behaviour.

ASSESSMENT CHECK

1 Select from the types of deprivation A, B, C, D and E below to complete the table relating to the deprivation model of prison aggression. One type will be left over. **[4 marks]**

A Deprivation of liberty

B Deprivation of autonomy

C Deprivation of goods and services

D Deprivation of heterosexual relationships

E Deprivation of security

Type of deprivation	Description of deprivation
	There is a lack of luxury items in prison
	Prisoners sometimes do not feel safe
	Prisons are single-sex
	There is a lack of choice about how to spend the day in prison

2 Explain how reliability could be assessed by using questionnaires to investigate the effect that exposure to TV violence has on children's behaviour. **[3 marks]**

3 Read the following item and then answer the question:

Some people argue that teenagers seem to be more aggressive than they usually are when they are playing computer games.

Using your knowledge of disinhibition, explain why some people feel teenagers show high levels of aggression in this situation. **[4 marks]**

4 Discuss the findings of one research study into the situational explanation of institutional aggression in prisons. **[4 marks]**

5 Outline and evaluate the role of desensitisation and/or cognitive priming on aggressive behaviour. **[16 marks]**

SUMMARY

Neural and hormonal mechanisms in aggression

- The limbic system, more specifically the amygdala, is implicated in aggressive behaviour. The amygdala's role is emotion, which is thought to underpin most aggressive acts.
- Serotonin and testosterone are both biochemicals which seem to be involved in mediating aggressive behaviour. In the case of testosterone it seems to affect the activity in the orbito-frontal cortex.
- The MAOA gene affects the breakdown of dopamine, noradrenaline and serotonin. This seems to underpin some aggressive behaviour.

The ethological explanation of aggression

- The ethological explanation of aggression suggests that as humans, like animals, we have innate mechanisms which lead us to aggressive behaviour to help our chances of reproduction and survival. These are called the innate releasing mechanism and fixed action pattern.

The evolutionary explanation for aggression

- The evolutionary explanation for aggression states that aggression helps in terms of survival and reproductive success. It does this by competing for resources and overpowering rivals for suitable mates. It also helps ensure that any offspring are fathered by the man who will raise the children.

Social psychological explanations for aggression

- The frustration–aggression hypothesis suggests that aggression is a by-product of frustration. Aggression can be a response when achievement of a goal is thwarted in some way.
- Social learning theory argues that aggression is learned by observing a role model being vicariously reinforced for aggressive behaviour. That behaviour is then imitated.
- The social learning theory states that not all behaviour is imitated. Mediating cognitive processes of attention, retention, reproduction and motivation affect whether the behaviour is imitated or not.
- De-individuation as a theory of aggression purports that the influence of being in a group means that an individual can act in an aggressive manner. This is thought to be due to the influence of group norms and a loss of identity, self-awareness and self-control.

Institutional aggression

- Institutional aggression in the context of prisons is problematic and there are two suggested explanations behind the higher incidence: dispositional and situational.
- The dispositional explanation argues that the high incidence of aggression in prisons is due to the characteristics that prisoners bring into the institution upon imprisonment. They have, it is argued, a predisposition to aggression due to personality and the home environment.
- The situational explanation argues that the high level of violence is due to the environment within the prison and the deprivation of liberty, autonomy, heterosexual relationships, goods and services and security. The deprivation prompts anger and frustration, which, in turn, makes aggression more likely.

Media influences on aggression

- Media, and more specifically computer games, have the potential to influence aggressive behaviour. This can occur through exposure to violence and desensitisation, disinhibition and cognitive priming.

- Desensitisation occurs when the violence shown by the media means that an individual becomes less affected by what they see and their emotional, cognitive and behavioural response is reduced. This in turn means that aggression is more likely to occur as a consequence.
- Disinhibition can make aggression more likely as the individual loses their sense of self. This occurs in particular when playing a computer game. This is akin to de-individuation, although the presence of others is not necessary.
- Cognitive priming as a theory argues that the cues learned from and witnessed in the media mean that an individual may be prompted to act aggressively. Examples of cues are weapons such as guns.

14 Forensic psychology

Introduction

Forensic psychology considers crime. Psychology has the ability to offer insights into why someone might commit a crime, but also how crime might be prevented. This chapter will consider both of those aspects but will initially also look at defining and measuring crime.

Specific focus here will be upon:

1 Offender profiling
2 Biological explanations for offending behaviour
3 Psychological explanations for offending behaviour
4 Dealing with offending behaviour.

Understanding the specification

- The area of offender profiling has several different methods and the ones that are covered by the specification are the top-down approach (this includes organised and disorganised types of offender) and the bottom-up approach, which includes investigative psychology. Part of investigative psychology is geographical profiling, and this is mentioned in the specification.
- Regarding biological explanations of offending behaviour, you could be asked about a historical approach in this section, specifically atavistic form. You should also know more current biological theories, which include both neural and genetic explanations.
- There are many psychological explanations of offending behaviour, but for this specification it is stated you need to know Eysenck's theory of the criminal personality. You also need to understand cognitive explanations such as level of moral reasoning and cognitive distortions. This should include hostile attribution bias, minimalisation and differential association theory. Make sure you are also aware of the psychodynamic explanations for offending behaviour.
- The last section looks at treatment and prevention in dealing with offender behaviour. You need to be able to outline the aims of custodial sentencing and talk about psychological effects of custodial sentencing. Recidivism is specified as a potential question topic. Finally, the treatments of behaviour modification in custody, anger management and restorative justice programme should be learned.

These are the basic requirements of the specification. However, other relevant material is included to provide depth and detail to your understanding. Don't forget also that you can be asked to evaluate any of the concepts. It is therefore important that research evidence to support or negate a topic is provided with your evaluation.

IN THE NEWS

The Psychological Enquirer

Natural born killer

Figure 14.1 Stephen Mobley: A natural born killer?

On 17 February 1991, 26-year-old Stephen Mobley, an individual with a history of criminal behaviour, walked into a Domino's pizza store in Gainseville, Georgia, USA, robbed the till and calmly shot store manager John Collins in the back of the head, joking that he would apply for the job vacancy now the man was dead. After being arrested and tried, Mobley was sentenced to death. His lawyer appealed the verdict on the basis that Mobley wasn't responsible for his actions, as he had inherited genes that made him a natural born killer, with various family members over the last four generations having been very violent, including incidences of rape and murder.

Stephen Mobley's case raises issues of what makes a criminal and to what extent criminals are responsible for their actions. His lawyer was arguing that criminality was genetically determined, a biological explanation, which meant Mobley had no free will over his murderous behaviour. Other more psychological explanations might argue that Mobley had a criminal personality, or had learned his criminal behaviour, or indeed that his early family upbringing was responsible. In this topic, we will be looking in more detail at such explanations for criminal behaviour, as well as examining different types of offender profiling and ways and means of treating and preventing offender behaviour. Ultimately, Mobley's appeal was unsuccessful and he was executed by lethal injection on 1 March 2005.

14.1 Offender profiling

If we were to believe the media version of **offender profiling** then it would be described as a profiler going into a murder investigation room, looking at the evidence so far and saying who might have committed the crime, narrowing it down to where they live, with whom, their age, gender, etc. The police would then follow the profile and find the killer. This is the glamorous view, and it does happen. However, in most instances it is an investigative tool that is used alongside all the other ways of solving a crime. It sometimes works, it sometimes doesn't.

Broadly speaking, there are two types of profiling: top-down and bottom-up. Top-down methods are where the profiler has experience and can use the evidence at the crime scene to develop a profile of the likely criminal. The bottom-up approach is when research and statistics of similar crimes are used to develop a profile of the criminal based on previous convictions. The key difference between the two is the source of the profile. Top-down uses the experience (and intuition) of a profiler whereas bottom-up uses information on similar crimes.

The key questions that must be asked in profiling are:

1 What happened at the crime scene(s)?
2 Who would have committed that crime/those crimes?
3 What kind of personality would that person have had?

KEY TERMS

Forensic psychology – an interaction of psychology and law that seeks to apply psychological theory to criminal investigation

Offender profiling – an investigative strategy used by forensic psychologists to identify likely suspects

Figure 14.2 What happened at the crime scene?

Jackson & Bekerian (1997) state that inferences about the criminal can be made from the scene(s) and that it is these which can enable a case to be solved.

The reason this can be argued is the modus operandi (MO) of the criminal, i.e. how they commit the crime, why they choose the situation, etc. Criminals often operate in a similar way and this reflects their personality. This is the core assumption of profiling. There is a core belief, implicit in this, that there is consistency in crime. For example, for profiling to work it needs to be assumed that the criminal's personality remains consistent. This then means that the MO will remain similar (because they will commit a crime the same way), thus the scene and any signatures (distinctive behaviours) left at the scene will be consistent.

The top-down approach

KEY TERM

Top-down approach – a method by which forensic psychologists use their knowledge and insight to create a profile of a possible offender from details of a crime scene

As stated, the **top-down approach** uses the experience and intuition of a profiler to draw up a profile from the crime scene. It is most often used in violent crime such as murder. This is why it is often called crime scene analysis.

This approach to profiling emerged in the 1970s with the Federal Bureau of Investigation (FBI) and uses a seven-stage process to narrow down the number of possible suspects for a crime. It helps with the decision-making process to have seven aspects to consider (Ressler *et al.*, 1988). Initially, though, all evidence needs to be collected from the crime scene, including photographs taken of the victim (if there is one) prior to the scene being disturbed. Then the seven decision-making tools are considered as follows.

1 Murder type

This asks whether the killing is an isolated incident. It could also be part of a number of killings, such as those committed by a serial killer, mass murderer or spree killer. A serial killer is classified as such if there have been three or more murders by the same person over a period of at least a month, with a period of 'down time' (i.e. no killing) between the murders. A spree killer is someone who has killed people in one time period (i.e. a day) in several locations. Mass murderers kill in only one location in one time period.

Initially a serial killer would be classified as a 'one-off' killer until more murders had been discovered/committed. This would give a very different picture of the perpetrator. However, when more than one murder takes place, an MO becomes apparent and the picture is more detailed. The difference in profiles between spree and serial/mass killers is noticeable, as serial killers choose their victim for their characteristics whereas spree killers do not tend to do this, so this is an important initial picture to establish.

2 Primary intent

This asks whether it was a deliberate, pre-meditated murder or not, which affects the profile development. It is possible that a murder is committed as a consequence of another crime, which elicits a very different picture of the criminal from someone who sets out to commit murder.

3 Victim risk

Some victims are classified as high risk and others as low risk due to their vulnerability. Children, old people and sex workers (in countries where prostitution is not legal) are all examples of low-risk targets as they can offer little resistance. The motive for killing a low-risk target gives important information to a profiler.

4 Offender risk

This is how much risk the criminal actually took in committing the crime and, again, gives insight into who they are. To attack someone on a busy street in daylight is highly risky for the criminal and so, if they have chosen to do this, it tells the profiler the kind of person the police should look for.

5 Escalation

This aspect is the extent to which the crime has escalated from previous offences or the potential it has to escalate. This gives the profiler a pattern of behaviours and may help to pre-empt future crimes.

6 Time factors

The time of day crimes are committed gives a profiler clues to the criminal's daily routine and also feeds into the information about risk levels.

7 Location factors

This is similar to the time factors consideration, as it can inform the profiler about the criminal's environment, transport options and even where they might live.

From the seven decision-making tools a picture begins to emerge for the profiler, which helps to classify the criminal into '**organised**' or '**disorganised**'. The procedure for classifying into these categories has led this type of profiling to be called typological profiling. The distinction between the two types is shown in Table 14.1.

Table 14.1 The distinction between organised and disorganised criminals

	Organised	Disorganised
Behaviour towards victim	Victim targeted Aggressive Controls conversation	Victim selected at random Crime unplanned Avoids conversation
Crime scene detail	Weapon absent Body hidden from view Body transported from original point of murder Crime scene orderly Attempts to clear up	Weapon present Sexual activity after death Body left in view
Characteristics of criminal	High intelligence Socially competent Sexually competent Skilled occupation Monitors media coverage of crimes	Average intelligence Socially immature Sexually incompetent Poor work history Lives alone Lives/works close to crime scene No interest in media coverage
Background of criminal	High birth order (e.g. eldest) Inconsistent discipline as child	Low birth order (e.g. youngest) Harsh discipline as child

The next step of the process is then for the profiler to compile the profile, taking all these factors into account. The profile will contain demographic and physical characteristics, a discussion of the likely behaviour of the perpetrator and any defining characteristics.

KEY TERMS

Organised type of offender – an anti-social type of law-breaker whose crimes are premeditated and carefully planned, so that few clues are left at a crime scene

Disorganised type of offender – a socially inadequate, unintelligent type of law-breaker, who carries out unplanned crimes and tends to leave clues at crime scenes

CASE STUDY

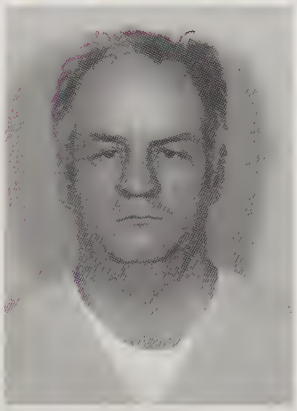


Figure 14.3 Arthur Shawcross

In the USA, Arthur Shawcross had been in prison for murdering a ten-year-old boy and an eight-year-old girl. He was sentenced to 25 years in prison in 1972.

He served 15 years and was released in 1987. March 1988 marked the start of a long string of murders, where Shawcross chose sex workers as his victims. Over two years he murdered 11 sex workers and many of the bodies were found near the Genesee River in New York State. The victims were usually strangled, beaten and in some cases mutilated.

A criminal profiler called Gregg McCrary, from the FBI, was brought in to help with the investigation. Together with Ed Grant, an investigator, he visited crime scenes and looked at the case files. They thought that half the murders had a clear pattern, which suggested the same perpetrator. From the available evidence they suggested that the murderer was:

1 White.
2 Male.
3 In his late twenties/early thirties, although they stated that this was probably his mental age rather than his actual age.
4 A previous offender of violent crimes.
5 In a low-paid job.
6 The driver of a cheap, basic car.
7 Probably married.
8 Living or working near the Genesee River.
9 Keen on hunting or fishing.

As the murderer had started leaving bodies where they were and coming back to cut them up at a later date, McCrary and Grant suggested that the police should try to find a body before it was cut up. When one was found, they said the police should not remove it but instead should conduct a surveillance operation. McCrary and Grant thought that the murderer would revisit the body and that he could be caught this way.

This was exactly what happened. Shawcross went back to the body, which meant the police could arrest him.

The profile drawn up by McCrary and Grant was surprisingly accurate and the only aspect that was wrong was the age, as Shawcross was ten years older than they suggested. However, his mental age was younger, so in some ways this aspect was correct too.

Shawcross was found guilty, and although he pleaded insanity, the court found him to be sane and he received a 250-year prison sentence.

Evaluation

- This case shows the accuracy level that can occur when typological (top-down) profiling is used. The profile, for this case, was very accurate.
- This is a case study and as such cannot be used to prove a profiling method correct universally.

Evaluation

- There is a lack of theoretical foundation to this approach, which gives it a feel of an inexact science – more hunch than reasoning. In some people's view this reduces its credibility as it lacks the background research to say why it works. Reliance on intuition is problematic as personal emotion and memories can sway intuition.
- This method of profiling can only really be used in the crimes of murder and rape. This restricts its applicability, unlike the geographical approach, which looks at the pattern of crime rather than the crime type, making it more versatile.
- Having two main categories of criminal is very simplistic. It is likely that criminals do not fit neatly into either category, therefore making the prediction of their characteristics difficult. It is likely there will be more types, and the distinction is too restrictive.
- Each crime scene is unique and there are many different variables that should be accounted for. This makes the typological definition difficult to apply and this affects its accuracy.
- Alison *et al.* (2002) sees the approach as based upon out-dated theories of personality being stable. Continually changing situational factors also influence criminal behaviour and so should also be considered.

The bottom-up approach

The **bottom-up approach** a picture of the potential criminal from facts and figures collated from previous crimes of the same type. This removes the intuition element of the profiling.

Investigative psychology

Investigative psychology is the term used to describe an approach fine-tuned in the UK by David Canter, who wanted to develop a method that used research as its basis. The fact that the analysis is based on statistical techniques makes the approach more objective.

There are essentially five assumptions of investigative psychology that underpin the crime, specifically what occurs between the victim and the offender:

1 **Interpersonal coherence** – this means that there is an assumption that behaviour is consistent across situations; more specifically, that everyday behaviour is similar to the way a crime is committed. For example, an aggressive person is more likely to commit an aggressive crime.
2 **Time and place** – these are similar to the time and location factors in the top-down approach where the positioning and timing of crimes give clues as to where the perpetrator might live or work.
3 **Criminal characteristics** – placing criminals into categories is a useful exercise to help the police.
4 **Criminal career** – this considers how far into their criminal experience offenders are, and how their pattern of crime might progress.
5 **Forensic awareness** – this highlights the fact that offenders who show an awareness of forensic investigation, e.g. by cleaning a crime scene, will probably have committed a crime before and been through the criminal justice system.

With these assumptions in place, investigative psychologists can work on a profile using statistical techniques. One example is **geographical profiling**.

KEY TERMS

Bottom-up approach – a method by which forensic psychologists use data from previous, similar crimes to create an objective profile of a possible offender

Investigative psychology – a form of bottom-up approach profiling that attempts to describe the behaviour of offenders and develop an understanding of their actions

Geographical profiling – a form of bottom-up profiling that analyses the locations of a connected series of crimes in order to determine a probable area of where an offender lives

Geographical profiling

This specifically covers the location and timing aspects of a crime. This concurs with the assumption previously mentioned that these factors can give important clues to the living habits of the offender (Canter & Youngs, 2008).

There are four main principles which all help shape a profile using this method:

1 **Locatedness**. The location says a lot about the offender. Some crimes have several locations and they are all really important from a profiler's point of view. Locations include where the victim is met initially, where the attack occurs, where the victim is actually killed and finally where the body is disposed of. Of course, these might all be the same place, but if not, multiple locations can add to the profile accuracy.
2 **Systematic crime location choice**. This principle says that locations are not in any way random. Familiarity to the offender is important with this choice and means that the location is worthy of careful consideration.
3 **Centrality**. This principle states that there are two types of offenders: commuters and marauders. Commuters travel to commit the crime (but it is still likely to be somewhere familiar to them), while marauders commit crimes close to home. This centrality means that the crimes may cluster.
4 **Comparative case analysis**. This is the principle that other crimes should be considered as being committed by the same offender. The reason why this connection is actively sought is that the more crimes that

are committed by one particular person, the greater the accuracy and application of geographical profiling.

When these principles are applied to a location or series of locations they can help the police by narrowing down the pool of suspects, helping mobilise police resources for door-to-door enquiries and patrols.

CASE STUDY

Figure 14.4 John Duffy – the Railway Rapist

From 1982 to 1985 there was a series of rapes committed close to railway stations in the south east of England. At that point the perpetrators were nicknamed the Railway Rapists. Then thee women were killed, and it seemed the crimes were escalating. The offenders were renamed the Railway Killers and the police brought in Dr David Canter, a criminal profiler, who would, they hoped, be able to help them.

Evidence from the scene indicated that one of the perpetrators worked alone, so Canter applied his profiling theory and created an offender profile for the 'Railway Killer'. This profile included the personal characteristics and geographical information based on where the crimes were committed (see Table 14.2). The second column shows a comparison with John Duffy.

Following the help from Dr Canter, John Duffy, who had previously been questioned by the police, was arrested. Although he said he had not worked alone, it was not until 1997 that he gave the name of his accomplice and David Mulcahy was arrested.

Duffy was charged with a total of 11 rapes and 2 murders; Mulcahy was charged with 7 rapes and 3 murders. They will never be released from prison.

Evaluation

- Canter's profile was very accurate, with 12 of the 17 suggested characteristics being correct. The geographical information was particularly invaluable.
- This is a case study so has limited value in providing evidence that this method of profiling works universally.

Profile of personal characteristics	John Duffy
Poor relationship with women but has probably been married	Separated from his wife
Considerable sexual experience, potentially with bondage	Abusive to wife and tied her up during sex
A couple of close male friends	Two close male friends. David Mulcahy was a friend from school days
Experience with police or knowledge of procedures	He had a criminal record and combed the pubic hair of the victims to remove evidence of his own
Probably not physically strong	He carried out many of the offences with an accomplice, but was a martial arts instructor, which implies physical fitness He used restraints
Male in his mid-late twenties	He was 29
Potentially semi-skilled work	Carpenter
From the geographical information	
Knowledge of the railway	He worked for the railways as a carpenter
Worked/lived near the crime scenes	He lived in Kilburn, which was central to the rapes and murders he committed

Table 10.2 A comparison of the profile characteristics and the actual characteristics of John Duffy

Figure 14.5 David Mulcahy in 1999, when charged with rape and murder

ON THE WEB

A more detailed account of the John Duffy case can be found at:
www.biography.com/people/john-duffy-17169740#synopsis

Evaluation

- The investigative psychology approach is based heavily on research and statistical likelihood. This means that it is seen to be more scientific than top-down approaches. This use of statistics and theory has removed intuition of the profiler from the process, which is argued to make it more reliable.
- Locations are important for the identification of the offender, but there are other considerations that need to be made, such as their psychological characteristics. Geographical profiling concentrates on location, which could miss important information if used in isolation.
- The technique requires statistical information from previous crimes, which is not always easy to gather. The problems of measuring crime show how imperfect the information might be in terms of coverage and so this means the evidence base on which this method functions is incomplete and/or inaccurate.
- Geographical profiling helps locate offenders of many different crimes. It can be used to locate the likely home of burglars given that they can concentrate their crimes in a familiar place, often not too far from where they live. This means the method can be widely applied across many different types of crime.

Research on offender profiling

Copson (1995) found from questionnaires given to 184 US police officers that 82 per cent found top-down profiling useful, while 90 per cent said that they would use it again, which suggests the approach is well-regarded.

Lundrigan & Canter (2001) collated evidence from 120 murder cases and found that the offender's home base was invariably located in the centre of the crime scene pattern, giving support to geographical profiling.

Canter & Heritage (1990) analysed 66 sexual assault cases using 'Smallest Space Analysis', an investigative psychology technique, which identified clear common patterns of behaviour, thus giving support to the bottom-up approach.

Snook *et al.* (2008) reviewed evidence for criminal profiling to find that the idea that profiling could predict criminals' characteristics was an illusion, with no theoretical background or scientific support. Belief in the technique was based on unsupported anecdotes and over-emphasis of a few cases of correct profiling.

Pinizzotto (1984) identified that out of 192 requests for criminal profiles, only 17 per cent were actually useful for identifying the suspects. However, Pinizzotto also showed that 77 per cent of respondents indicated that the profiles had assisted them to focus on the investigations.

Evaluation

- Research on the effectiveness of criminal profiling is mixed.

  Abumere (2012) found more than 75 per cent of the British police officers who were asked said that the advice of the profiler had been useful to them in making predictions about the crime. For them the advice improved their understanding of the offender and others also stated that it supported their ideas and feelings about the offender. But police from the Netherlands stated that they found the advice from the profilers too general and others stated that the follow-up work needed was not financially viable. They also did not take advice from the profiler if it contradicted their own ideas, which overall gives a mixed appraisal of profiling.

  Shanahan (2008) found the responses to questionnaires sent out by the Criminal Investigation Department, which were to evaluate the effectiveness of the criminal profiling in the department, were mainly negative. This was only when it had not worked effectively however – Shanahan found that most police officers still expressed confidence in criminal profiling and its potential to help them, which again suggests a mixed appraisal of offender profiling.

- Overall there is a suggestion that profiling is used by police but is seen as only one of the tools available to them when solving a crime and it is not the main method used.

- As criminal profiling is so often used in conjunction with other police work it is sometimes difficult to establish how much of a contribution it makes to an investigation. This makes its effectiveness impossible to measure.

STRENGTHEN YOUR LEARNING

1. Explain the difference between top-down and bottom-up methods of criminal profiling.
2. Outline two strengths of top-down profiling.
3. Explain the difference between organised and disorganised types of offender.
4. Outline two weaknesses of using criminal profiling.
5. Outline one case study where criminal profiling has helped identify the victim.

ASSESSMENT CHECK

1 Select which two of the following four statements, A, B, C and D, relate to the bottom-up approach to offender profiling: **[3 marks]**

A Constructs a profile of a possible offender from facts gathered from previous crimes of the same type

B Uses geographical profiling involving the location and timing aspects of a crime

C Uses the experience and intuition of a forensic psychologist to construct a profile of a possible offender from clues gathered from a crime scene

D Draws a distinction between organised and disorganised types of criminals

2 A researcher asked police officers whether they would use offender profiling to aid their investigations if they had the choice. They were asked to respond 'yes' or 'no'.

What appropriate inferential statistical test could be used to test whether there was a statistically significant difference between the number who answered 'yes' and the number who answered 'no'?

State two reasons for your choice of statistical test. **[3 marks]**

3 Niamh works as an investigative psychologist with her local police force.

Use your knowledge of investigative psychology to explain how Niamh would construct profiles of possible offenders. **[4 marks]**

4 Outline what is meant by top-down offender profiling. **[2 marks]**

5 Discuss the effectiveness of offender profiling. **[16 marks]**

14.2 Biological explanations for offending behaviour

'Once upon a time, a woman was picking up firewood. She came upon a poisonous snake frozen in the snow. She took the snake home and nursed it back to health. One day the snake bit her on the cheek. As she lay dying, she asked the snake, "Why have you done this to me?" And the snake answered, "Look, bitch, you knew I was a snake."'

Natural Born Killers (1994)

A historical approach (atavistic form)

An early historical perspective for explaining offending behaviour was suggested in the 1870s by an Italian criminologist called Cesare Lombroso. His work centred around the idea that criminals had distinguishing physical features which originated from a more primitive stage of development. In other words, they were less civilised and had more in common with evolutionary ancestors than people in the 1870s. For that reason he saw them as wilder and not suited to the culture and society in the late 1800s.

Lombroso called the features '**atavistic**'. He measured the physical features of Italian criminals and argued that they had measurements that distinguished them from non-criminals. These head and facial feature measurements, he said, demonstrated that they were from an earlier evolutionary stage of development and that criminals were born that way.

The data on the features was based on measurements from almost 4,000 criminals and also the skulls of almost 400 dead criminals. Examples of the atavistic features identified by Lombroso (see Figure 14.6) are:

- heavy brow
- large strong jaw
- large ears
- extra nipples or extra fingers/toes.

Lombroso argued that criminals were not to blame for their activities as their behaviour was determined by their physiology. This had implications for the criminal justice system as the assumption by the legal system was that they chose to act the way they did, whereas Lombroso was suggesting the opposite.

Research

Goring (1913) conducted a study looking at some of Lombroso's proposed features. He tested Lombroso's findings by comparing 2,348 London convicts with a control group. Goring failed to replicate Lombroso's findings and concluded that criminal behaviour is not linked to physical appearance.

Hooton (1939) conducted a 12-year study comparing 13,873 male prisoners in 10 states in the USA with a control group of 3,023 men to investigate whether there were any physical differences. His publication of the results argued that criminal behaviour was due to biological inferiority and 'degeneration'. He also argued that a variety of unattractive physical

KEY TERMS

Biological explanations of offending behaviour – theories that perceive criminal activity as based upon physiological factors of offenders, such as head and facial feature measurements

Atavistic form – an explanation for criminal activity that sees offenders as representing a more primitive evolutionary stage of development, which is shown by specific facial and physical features

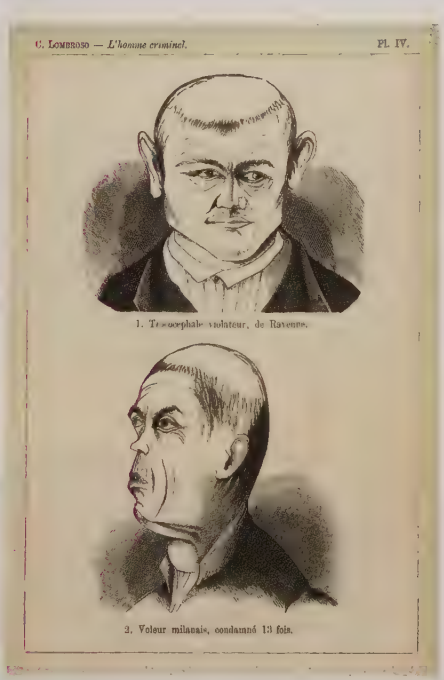


Figure 14.6 Atavistic features identified by Lombroso (1876)

characteristics could be ascribed to criminals. However, these included sloping foreheads, protruding ears and narrow jaws which are different from the characteristics outlined by Lombroso.

Evaluation

- It is possible that the atavistic features Lombroso described are linked to criminality but not because of them being at an earlier stage of evolutionary development. Kaplan's (1980) self-derogation theory states that poor social interactions (which could be due to the way someone looks) can bring about criminal behaviours due to poor self-esteem and a reluctance to conform. Similarly, Agnew (1992) argued that unwanted and unpleasant interactions (again possibly due to appearance) can increase frustration and anger. This is called general strain theory.
- Lombroso's theory should be considered in its historical context to see how influential it has been. Prior to Lombroso's work criminality was often seen from a religious perspective and was attributed to bad spirits and devil influence. Lombroso's theory, although lacking the scientific rigour of today, was at least an attempt to bring explanations for criminality into the realms of science.
- Lombroso's methodology has been criticised because he merely measured the features of criminals and had no control group. Without a comparison with non-criminal controls it is difficult to draw conclusions and state that a feature is distinguishing. This was rectified by Goring and Hooton's work (see above) to some extent.
- Another issue with Lombroso's methodology is that his sample may have included people who had learning difficulties and this may have skewed the measurements taken as some learning difficulties have a physical effect on the facial features.
- The theory may have, in some way, contributed to criminals being stereotyped as looking a certain way. This is clearly unhelpful and perpetuates an idea that certain features are associated with criminal behaviour.

ON THE WEB

A more detailed review of the atavistic form theory can be found at:

www.sagepub.com/schram/study/materials/reference/90851_04.1r.pdf

It was written by Cesare Beccalossi (2010) for publication in *The Encyclopedia of Criminological Theory.*

Genetics

Genetics as an explanation for criminal behaviour is problematic as no criminal gene has been identified. However, twin, family and adoption studies indicate there may be genetic transmission of criminal behaviour.

Twin studies

The concordance (similarity) rate of twins for criminal behaviour gives an indication of the extent that offending behaviour could be heritable.

Research

In Table 14.3 there are two studies that show that the concordance rates of MZ (genetically identical) twins is greater than that of DZ twins (50 per cent genetically identical, which thus supports the idea of criminality having a genetic component).

KEY TERM

Genetic explanation of offending behaviour – a biological theory that sees genes inherited from one's ancestors as forming the basis to an individual's criminal behaviour

Table 14.3 Studies showing the concordance rates of MZ and DZ twins

	MZ concordance rate for criminal behaviour	DZ concordance rate for criminal behaviour	Sample size
Christiansen (1977)	35%	13%	3,586 twin pairs
Raine (1993)	52%	21%	Review of 13 studies

Family studies

The Cambridge Study in Delinquent Development (Farrington, 1996), studied 411 males from 400 families from age 8 to age 32 using interviews, and from age 10 to age 40 using crime records. The conviction rates of these men were compared with convictions of their biological fathers and mothers, and close family members. The study found:

- 64 per cent of the families had at least one convicted person
- 6 per cent of the families accounted for 50 per cent of all the convictions
- convictions of one family member were strongly related to convictions of every other family member
- about 75 per cent of convicted fathers and convicted mothers had a convicted child
- approximately 75 per cent of families with convicted daughters also had convicted sons
- convictions of older siblings were more strongly related to convictions of the males than were convictions of younger siblings.

The conclusion was that offending is strongly concentrated in families and is demonstrated from one generation to the next, suggesting a genetic component to criminal behaviour.

Adoption studies

Adoption studies allow the behaviour of an individual to be compared with both their birth and adopted parents. If their behaviour is similar to that of their adopted parents then the reason can be said to be environmental. However, if it is more like the behaviour of the biological parents it is attributed to a possible genetic influence.

Joseph (2001) conducted a review of adoption studies of criminality, finding no support for a genetic basis to any form of criminal or anti-social behaviour. This was also true for twin and family studies. These findings strongly refute the genetic explanation of criminality.

Rhee & Waldman (2002) conducted a meta-analysis of 51 twin and adoption studies to find that shared and non-shared environmental influences accounted for 59 per cent of criminal behaviour, which suggests both genes and environmental influences contribute heavily to criminality.

Evaluation

Results from research seem to indicate that there are effects on offending behaviour influenced by the family. It is important to note though that these results merely illustrate that offending behaviour runs in families, and this does not automatically mean that it is due to genetic transmission. A study such as this cannot show how the results occurred – it could equally be social learning or other environmental influences.

- The stress of adoption could account for offending behaviour in adopted children and it is therefore difficult to say whether there is genetic transmission or not. Stress prior to birth can affect the development of the foetus so even if the child is adopted very early, environmental influences pre-birth cannot be controlled for.
- It can be seen that in twin studies the concordance rate is higher when they are genetically more similar. This could be argued to show that there may be genetic transmission. However, it could equally be argued that as MZ (identical) twins are treated more similarly to each other than non-identical twins, this could account for the increased rate of concordance.

Neural explanation

Neural explanations for offending behaviour have been proposed for both the biochemistry of the body and the physiology of the brain.

KEY TERM

Neural explanation of offending behaviour – a biological theory that sees abnormally functioning brain physiology and biochemistry as forming the basis to an individual's criminal behaviour

Biochemistry

There are three biochemicals that are implicated in offending behaviour: noradrenaline, serotonin and dopamine:

- **Noradrenaline** is part of the fight-or-flight response and helps individuals respond to threatening situations. Research suggests that high levels are linked to violence and aggression and so, as a consequence, it is easy to explain some crimes as being underpinned by a chemical imbalance.
- **Serotonin** regulates mood and impulse control. In low levels it is implicated in criminal behaviour as there will be more impulsivity. If a situation is particularly emotional then someone with low levels could easily react as they may have an impaired capacity to hold back.
- **Dopamine** is implicated in offending behaviour because of its link to addiction and therefore substance abuse. This makes crime more likely. Dopaminergic activity in the limbic system means that pleasure is experienced, and the greater the activity, the greater the feeling of pleasure. This makes addiction more likely. For a more comprehensive explanation of this process see Chapter 17 (online) page 17.

Research

Higley *et al.* (1996) found that levels of testosterone were positively correlated with aggressiveness but not impulsivity, whereas levels of serotonin were negatively correlated with impulsive behaviour and extreme aggression, but not general aggression. The results suggest that biochemical levels may underpin offender behaviour.

Krakowski (2003) reported that, while serotonin was implicated in lack of impulse control and violence, making a causal link was difficult, as individual differences and the social context of behaviour also play a part. For example, if a violent event occurs in a crowd, it could prompt a different reaction from an individual than if they were alone, even if the levels of serotonin were the same.

Brunner (1993) examined the effects of the MAOA gene, which alters the levels of neurotransmitters of people with the shortened version of the gene. This then is linked to aggressive behaviour and so can equally be applied to violent crime (see Classic research, page 609).

Evaluation

- It can be argued that the biochemical explanations are relevant more to everyday behaviour, which then leads to offending behaviour in some circumstances. Biochemistry may also underpin a mental illness and it is that which increases the likelihood of crimes being committed in some circumstances rather than the level of a chemical. This suggests the relationship is indirect.
- Much research into neurotransmitters was conducted on animals creating issues of validity. Observing increased aggression in mice with higher levels of a neurotransmitter does not automatically extrapolate to humans committing a violent crime.
- Biochemical explanations are reductionist and therefore simplify criminal behaviour. It is likely that the issue is far more complex than the level of a biochemical in an individual's brain.

Brain physiology

The idea that the physiology of the brain might be implicated in offending behaviour in some way has been suggested. The two key areas implicated in the brain are the limbic system and the way the brain develops.

Limbic system

This is a central part of the brain and regarded as the primitive area. It is the centre where emotions are modulated and for this reason could be argued to be implicated in offending behaviour.

This is particularly the case with criminal psychopaths (or anti-social personality disorder). Psychopathy is a personality disorder with no clear cause. Psychopaths seem to have problems processing emotions and empathy. This leads to a lack of remorse or guilt if their actions affect others in a negative way. Some research argues that because of a fault in their limbic system a lack of emotional reactions could lead to planned and organised offending behaviour as psychopaths lack remorse and are more self-serving as a consequence.

Brain development

Work examining the role of brain development in offending behaviour has also centred around individuals with anti-social personality disorder (psychopathy).

Research by Raine *et al.* (2000) has suggested that the frontal lobe volume of people with anti-social personality disorder is less than those without. This reduced activity is argued to be why people with anti-social personality disorder do not feel guilt or appear to have a conscience. This means they do not have the 'brake' that stops the majority of the population from committing crimes against others.

Research

Research by Kent *et al.* (2001) used fMRI scanning to ascertain any abnormalities in psychopathic brain activity during an emotion-based task. Kent *et al.* (2001) used fMRI brain scans to find that criminal psychopaths showed much less activity in the limbic system than non-criminal control

participants during an emotion-based task, with psychopaths using their frontal lobe to a greater degree in such situations. This supports the idea of brain physiology being associated with criminal behaviour.

Raine *et al.* (1997) investigated whether there was any difference between the brain activity of murderers and non-murderers. The sample was taken from 41 violent murderers who had claimed to be not guilty by reason of insanity. They had to be assessed for this reason. Using a PET scanner, Raine *et al.* found some differences in brain activity in areas linked to aggression such as the prefrontal cortex and areas of the limbic system, again supporting the idea of brain physiology being related to criminality.

Fallon (2013) conducted scans on the brains of psychopaths, finding an unusually low pattern of brain function in a part of the frontal lobes associated with empathy and control. This additionally suggests that brain development and abnormalities might be implicated in criminal behaviour.

RESEARCH IN FOCUS

Scanning brains for atypical brain structure and activity is one way to investigate the physiology of the brain as having an effect on offender behaviour. However, there are ethical issues with this.

What are the ethical issues of this kind of research? Why is the research socially sensitive?

Evaluation

- A clear link between abnormal processing and crime may not be apparent. The functioning could be due to a brain trauma. Not everyone who receives a head injury commits crime though, even when the damage is comparable to the changed physiology in research. Cause and effect is therefore not clear as it does not affect people with brain physiology issues in the same way.
- Brain functioning issues may be due to abuse in an offender's childhood, for example if they were beaten as a child. This has implications for whether an offender is culpable or not as it could be argued it is beyond their control.
- Sample sizes for this kind of research are generally small for two reasons. First, the target population (e.g. psychopaths and criminals) is hard to access and second, using scanning is time consuming and expensive. This has an effect on the extent to which results can be generalised.

STRENGTHEN YOUR LEARNING

1. Identify which neurotransmitters are implicated in offending behaviour.
2. Outline one study which supports the role of a neurotransmitter in offending behaviour.
3. Outline evidence to suggest that there is a genetic underpinning to offender behaviour.
4. Explain the atavistic form theory of offending.
5. What evaluative points can be made about the atavistic form theory of offending?

14.3 Psychological explanations for offending behaviour

'It is a man's own mind, not his enemy or foe, that lures him to evil ways.'
Buddha (approx 500BC)

KEY TERMS

Psychological explanations of offending behaviour – theories that perceive criminal activity as based upon non-physiological factors of offenders, such as extraversion, neuroticism and psychoticism

Eysenck's theory of the criminal personality – a psychological explanation that sees criminal behaviour as originating from specific personality characteristics

Eysenck's theory of the criminal personality

Eysenck's theory (1963) is actually a general theory of personality that has been very influential over the years. It is a trait theory, in other words it suggests that all personalities are made up of certain traits (characteristics) and the level you have of those traits determines your personality. His original work was based on servicemen, not criminals, but the theory has subsequently been applied to offending behaviour.

The theory

The theory originally argued that there were two personality traits: 'extraversion' and 'neuroticism'. In 1976 Eysenck added 'psychoticism' as a third trait following his work with people with schizophrenia, as he felt there were elements of personalities that were not covered by the other two traits. The characteristics of each trait are as follows:

- **Extraversion** – an extravert is sociable, impulsive, expressive and risk taking. At the other end of the continuum, an introvert acts in the opposite way, being happy in their own company and more cautious.
- **Neuroticism** – an individual who scores high on the neuroticism scale will exhibit such behaviours as nervousness, anxiety and obsessiveness. The opposite end of the continuum is described as 'stable' and they would have a calm demeanour and a more carefree attitude.
- **Psychoticism** – someone who measures high on the psychoticism scale would be insensitive, unconventional and lack a conscience.

The psychoticism dimension differed from the other two, Eysenck argued, as he felt most people would gain a low score on the measure for psychoticism. With extraversion and neuroticism he felt the distribution would be more even, with most people falling in the middle of the spectrum and equal numbers on each end of the continuum.

Eysenck Personality Questionnaire

There are several measures for Eysenck's theory, one of the most widely used being the Eysenck Personality Questionnaire (EPQ). This has about 100 items in its full version and 48 in the shorter version. Examples for items measuring each personality trait are as follows:

- **Extraversion**
  – Do you like to talk a lot?
  – Are you rather lively?
- **Neuroticism**
  – Do you worry about things that might happen?
  – Are your feelings rather easily hurt?

YOU ARE THE RESEARCHER

Personality is often measured using a questionnaire format. However, there are issues with validity and reliability using this method. What are these issues? Can you think of an alternative method or way of combatting these issues?

- **Psychoticism**
  - Do you seem to get into a lot of fights?
  - Would you enjoy practical jokes that could sometimes really hurt people?

Biological basis to the theory

Eysenck argued that there was a biological basis to personality and that the predisposition to certain traits was inherited. In terms of criminal behaviour this is essentially saying that criminals are born with a personality that gives them a higher chance of becoming an offender.

The biological basis to extraversion, Eysenck argued, was the level of cortical arousal in the brain. The reticular activating system (RAS) modulates the level of activation. This is rather like a car ticking over at standstill – some hardly fire at all, other engines are more revved up. Eysenck argued that if the level of activation is low, then a person will seek stimulation from the environment to raise the level. This will mean the brain is functioning at its optimum. Extraverts seek stimulation from their environment, so Eysenck argued their brains had lower activation levels. Conversely, introverts withdraw from too much stimulation because, Eysenck argued, their brain arousal level needed to be reduced to function at its best.

With neuroticism, Eysenck suggested that the biological basis was due to the autonomic nervous system. Some people react swiftly and strongly to stress physiologically and Eysenck argued that those measuring high for neuroticism would react quickly and to a greater degree.

Eysenck's argument for a biological basis to psychoticism is not detailed, although he did mention that androgens (male hormones) such as testosterone might be implicated.

Eysenck's theory applied to criminal behaviour

The basic ideas underlying Eysenck's theory are that:

- offenders demonstrate distinctive personality traits or behaviour patterns
- there is a genetic basis for these personality traits
- development of conscience, which can stop offending behaviour, may be faulty.

With regard to the traits, he argued that people measuring higher were more likely to commit crime, but for different reasons. High extraverts are sensation seekers and for that reason the 'thrill' of committing a crime might make them drawn to such behaviour. High neurotics experience high levels of emotion, meaning they would be more likely to commit a crime in an emotionally charged situation. They are also more easily conditioned because of their responsive autonomic nervous system and therefore they could be conditioned to commit crime. Individuals scoring high on the psychoticism scale are more likely to commit crime as they are aggressive and lack a conscience. This means there will be less holding them back and concern for others will not prevent them.

Research

Furnham (1984) assessed the personalities of 210 participants, finding that the best indicators of self-reported delinquency were levels of psychoticism, then neuroticism, followed by levels of moral guidance, extroversion and finally social skills. This suggests some association of personality traits with criminal behaviour.

ON THE WEB

If you wish to test yourself on the Eysenck personality test, a free one can be found at:

http://similarminds.com/eysenck.html

Farrington (1992) found that offenders who had been caught and convicted had high levels of neuroticism and low levels of extroversion, whereas self-confessed criminals who hadn't been caught had low levels of neuroticism and high levels of extroversion. This suggests that personality characteristics differ between different types of criminal. For instance, impulsive criminals are more likely to get caught, while those who calmly plan their crimes are less likely to do so.

Heaven (1996) conducted a longitudinal study monitoring 282 14 year olds over two years. Findings showed that psychoticism was the best predictor of later delinquency, giving some support to Eysenck's theory that personality traits are linked to criminality.

Evaluation

- Research findings do not clearly support Eysenck's theory for all three traits. Most studies have suggested that offenders score higher on psychoticism and neuroticism. However, results for extraversion are mixed. This could be due to the kind of crime measured, as certain personalities may be drawn to specific types of crime. Extraverts, for example, may be more likely to be drawn to crimes that raise adrenaline levels, and if these are not part of the measure of the research then their criminal tendencies will be missed.
- The argument that personality is inherited and therefore an individual is born with a predisposition to crime has far-reaching implications. The legal system is based on the idea that a person is in charge of their own actions and if their personality is fixed at birth this does not fit with that idea. It calls into question whether someone is actually culpable of a crime they commit.
- Eysenck has been criticised for the original sample that he used to develop his theory. It could be argued that it did not cover an adequate range of people and therefore specific personality types will have emerged as dominant.

KEY TERMS

Cognitive explanations of offending behaviour – a psychological explanation that sees maladaptive thought processes as underpinning criminal behaviour

Level of moral reasoning – a cognitive explanation that sees individuals of lower moral development as more likely to commit crimes, as they tend not to consider the effect of their actions upon society

Cognitive explanations

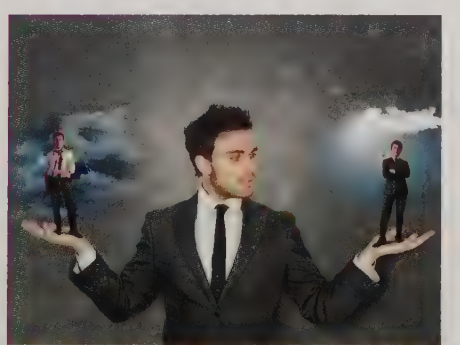


Figure 14.7 When do we understand the difference between right and wrong?

Level of moral reasoning

Developmental theories of moral development often state that **moral reasoning** is a stage process, whereby as someone matures their moral reasoning becomes more sophisticated. Piaget adhered to this view and also felt that an individual's moral development was completed by the age of nine or ten. This fits with the age of criminal responsibility in the UK.

However, in contrast, Kohlberg suggested a stage theory of moral development where some individuals did not progress past certain levels. This thus makes them more likely to commit a crime. He said that there are three levels of moral development and two stages within each one of those levels, as shown in Table 14.4.

Table 14.4 Kohlberg's stages of moral reasoning

Level	Stage	Reasoning behind committing a crime
Pre-conventional morality (consideration of the self)	Punishment stage	The most basic reasoning: will I be punished? If punishment is not definite, a crime is more likely to occur
	Reward stage	This is all about what there is to gain from the behaviour. If the potential gains are good then the crime is more likely to occur
Conventional morality (consideration of society)	Good-boy or good-girl stage	This stage considers what other people would think. If the closest people are criminals then the crime is more likely to occur
	Law-and-order stage	This stage considers obedience to the law. Is the act illegal? Someone at this stage would be less likely to commit a crime
Post-conventional morality (own mind)	Social contract stage	Someone at this stage adheres to the law but may commit a crime in certain circumstances, where they may feel the law should not apply
	Ethical principle stage	This stage is where the individual has their own moral code and may commit a crime if they feel the law is unjust

The argument is that an offender who is at a lower stage of moral development will be more likely to commit a crime as they are thinking about how it affects them rather than society.

Research

Hollin *et al.* (2002) suggested that offenders were in a less mature stage of moral development than non-offenders, which supports Kohlberg's viewpoint.

Palmer (2003) looked at the association between moral development and offending behaviour and suggested that it is specific moral values that are associated with offending and that there is a relationship between the two. The practical application of this is that intervention programmes should incorporate training to increase offenders' level of reasoning.

Ashkar & Kenny (2007) compared the moral reasoning levels of juvenile sex offenders and non-sex offenders to see whether there were differences in the maturity of reasoning. When asked about their reasoning in situations similar to their crimes, both groups had a pre-conventional level of moral reasoning (see Table 14.4). However, they showed higher (conventional) levels when it was a situation that was unrelated to their crimes. This suggests that 1) moral reasoning varies by situation and 2) offenders have a lower level of moral reasoning which is specific to their offending type.

Evaluation

- The theory was developed using moral dilemmas (scenarios where participants choose between two outcomes) and therefore is argued to be low in predictive reliability. The way a participant responds on a moral dilemma may differ greatly from what would happen in reality.
- Kohlberg's theory was based on data from boys only and is therefore gender biased. Gilligan (1982) developed a theory that proposed gender differences following her work looking at the moral development of women. She argued that women focus on how an action affects other people and that men consider fairness and justice. Given the varying rates of crime between men and women it may be that moral development in genders is different. Kohlberg does not take this into account.
- Work by Walker (1989) showed morality developed over time, as Kohlberg suggested. This can account for the incidence of anti-social behaviour in younger adults.
- Moral reasoning can account, to some extent, for the individual differences in offending behaviour. It can explain, for example, why one person would commit a crime but someone else would not.

KEY TERMS

Cognitive distortions – a cognitive explanation that sees criminals using faulty thought processes to justify their criminal behaviours

Hostile attribution bias – a form of cognitive distortion, linked to aggressive crimes, where offenders misinterpret the actions of others as intimidating and thus worthy of an aggressive response

Cognitive distortions

Hostile attribution bias and minimalisation

Attribution theory is a cognitive theory that considers the reasons people ascribe to behaviour. They make either internal attributions (it's my choice) or external attributions (it's the fault of the others).

Hostile attribution bias

Hostile attribution bias is a cognitive style which makes the assumption that other people's actions are in some way a negative reaction to the self. Imagine the scenario. Sarah is walking up to a group of friends at the school gates. They are busy talking and therefore do not greet her immediately. Many people would perceive that as being due to them being engrossed in conversation and that it is no indication of negative feelings towards Sarah at all. However, as Sarah has a hostile attribution bias she will interpret this as being a sign they do not like her or are angry with her. She may feel they no longer wish to be her friend. This misperception would lead her to feel upset and angry with them.

Research has shown that there is a relationship between hostile attribution bias and aggression (Spielberger, 1988). The way this occurs is thought to be due to the fact that cues from behaviour are misinterpreted, which then leads to a hostile response and, if the situation calls for it, an aggressive act.

It seems that hostile attribution bias is linked to some types of aggression and not others. Impulsive aggression is characterised by reactive outbursts in situations and it is this kind of aggression that shows a link to hostile attribution bias (Giancola, 1995). Other aggression, such as premeditated acts designed to be aggressive to achieve goals, does not seem to be underpinned or susceptible to hostile attribution bias. This is probably because there is

not an immediate reaction to a misinterpretation of behaviour. Premeditated aggression is used as a tool to get the individual what they want.

In research, hostile attribution bias is measured using hypothetical vignettes (stories) which can be interpreted as hostile/ambiguous or benign (harmless). The individual then says how angry they think they would feel if faced with that scenario.

Research

Gudjonsson (1984) designed the Blame Attribution Inventory, a questionnaire that measures the extent to which offenders 1) blame circumstances in the environment, 2) blame mental illness or a lack of self-control, and 3) feel guilt or remorse. Using this measure, Gudjonsson & Singh (1988) found that offenders differ in their attributions depending on the type of crime they have committed, which suggests that attributions cannot be applied universally to all types of crime.

Crick & Dodge (1994) found evidence to support a relationship between hostile attribution bias and aggression in children and adolescents. This occurred in both hypothetical (make-believe) and actual situations, which suggests that hostile attribution bias does relate to real-life criminal behaviour.

Epps & Kendall (1995) found that college students who had high scores for anger and aggression demonstrated a high level of anger and hostility when tested for hostile attribution bias, even when the situation they were tested on was benign. This gives some support to the idea of hostile attribution bias being related to criminal behaviour involving aggression.

Holtzworth-Munroe & Hutchinson (1993) found a link between hostile attribution bias and domestic violence. They showed men vignettes of difficult marital situations and asked them to rate the woman's behaviour in each case. Men who had been violent towards their wives were more likely to think that the woman was being negative towards the husband and that her intentions were hostile. This suggests a cognitive style that underpins violent and aggressive acts.

Evaluation

There is research support to demonstrate a link between hostile attribution bias and offending behaviour. For this reason it is regarded as one of the origins of aggressive behaviour in children, adolescents and adults, which can then lead to criminal behaviour.

The use of hypothetical situations in the measures for hostile attribution bias means that the measure could be argued to lack predictive validity. Therefore, the answer given may not be the response that would occur in that situation if it actually happened. There is also the possibility that some people who measure low on the scale for hostile attribution bias may actually interpret a situation as more hostile than recorded (or the reverse effect may occur with those who measure high on the scale).

Hostile attribution bias cannot be used to explain all offending behaviour. It does seem to be linked to impulsive aggression but cannot explain planned aggression well at all. For this reason it can be argued to be a factor in offender behaviour but is by no means the full explanation.

Minimalisation

Minimalisation (referred to as minimisation) is a type of cognitive distortion that serves to downplay criminal behaviour by the offender. It can be described as self-deception, where the offender does not accept the full reality of the situation and will attempt to rationalise what they have done. This involves such strategies as downplaying the effects of the crime, trivialising the acts and maybe even attributing some of the blame to the victim. This helps the offender deal with the guilt they experience.

KEY TERM

Minimalisation – a form of cognitive distortion where offenders use faulty thought processes to underestimate the seriousness of their criminal actions

Research

Alvaro & Gibbs (1996) found that when they measured for cognitive distortions in anti-social young adults there was a strong relationship between the level of antisocial behaviour and minimalisation, indicating that offenders may use minimalisation with negative behaviours.

Maruna & Mann (2006) examined the idea that using minimalisation to downplay crimes serves as a useful strategy to deal with guilt. They also considered how treatment programmes in prisons often try to challenge that minimalisation. They argue that the focus should be on the offender taking responsibility for the future rather than for past demeanours, and that minimalisation is seen as a psychologically healthy strategy in non-offending contexts. This means that rather than being seen as an explanation for why someone commits a crime, minimalisation is more to do with how they cope afterwards.

Kennedy & Grubin (1992) looked at the use of minimalisation by convicted sex offenders. The offenders' accounts of their offences were assessed with the researchers rating the accounts for their degree of denial. The majority of the offenders attempted to excuse their behaviour by blaming someone else, usually the victim. A third of the offenders denied any involvement at all, and a quarter believed that their victim benefited in some way from the abuse. It seems that for certain crimes at least minimalisation is used extensively by the offenders.

Evaluation

Research has shown that there is a relationship between the amount minimalisation is used and the level of offending behaviour in the criminal population. This means the idea is well supported by data.

It can be argued that minimalisation is a coping strategy for after a crime has been committed rather than an explanation for why someone might commit a crime. However, by downplaying crimes, the likelihood of reoffending increases.

There is more evidence for the use of minimalisation in some criminal populations than others. This means its influence on crime may depend on the type of crime; for example the relationship between minimalisation and sex offences is strong.

Differential association theory

The **differential association theory** was developed by Sutherland (1939) and was very influential at that time in deviance and delinquency research. It is a theory that explains how people learn to become criminals from their environment. It takes an integrated stance, which means it recognises the differing factors playing a part in causation of crime and combines them in one theory.

The dominant message is that crime is learned. This occurs by learning the motivations, attitudes and drives of those engaging in criminal activity around them. It is the contact with lots of favourable messages towards committing crime that increases the likelihood of delinquency. Sutherland called these messages 'favourable differentiations'.

Research

Matsueda (1988) argued, following a review of the literature on differential association theory, that there needed to be much more research conducted to improve the theory's ability to predict offending behaviour. He also stated that one of the main problems with the theory was that the concepts were vague. Making the theory easier to test would, he said, have implications for public policy.

Alarid *et al.* (2000) tested 1,153 newly convicted criminals for the extent to which differential association theory could explain their offending behaviour. They found that differential association served as a good general theory of crime and that it could explain offending behaviour, especially in men. They therefore argued that it was necessary to look at the context of offending and use it to predict the likelihood of someone committing a crime.

Evaluation

- The theory is too general. It has similarities with social learning theory but doesn't explain the cognitive processes that might underpin criminal behaviour. It is a sociological theory though, so Sutherland did not feel that a cognitive level of explanation was necessary.
- It cannot explain all crimes, such as embezzlement, which are individualistic and seemingly not influenced by others. One-off crimes are also not well explained using this theory.
- It can explain the prevalence of crime in certain areas. High crime rates are evident for certain areas, usually urban areas, and this theory explains how crime becomes common-place in such areas.

KEY TERM

Differential association theory – a psychological explanation, proposed by Sutherland, that sees offenders acquiring their criminal tendencies by learning from the motivations, attitudes and behaviour from those around them

Psychodynamic explanations

There are three **psychodynamic explanations for offending behaviour**: the **superego**, **maternal deprivation hypothesis** and **defence mechanisms**.

KEY TERMS

Psychodynamic explanations for offending behaviour – a psychological theory that sees criminal behaviour as formed from early childhood experiences, especially during the formation of the superego, which affect later behaviour

Superego – the irrational, moralistic part of personality that acts as one's conscience

Maternal deprivation hypothesis – an explanation that sees a failure to form positive attachments to caregivers in early life as leading to later criminal behaviour

Defence mechanisms – strategies used by the unconscious mind to reduce anxiety that result in criminal actions

The superego

The superego develops around the age of four and serves as an individual's conscience. It is also the superego that has the ability to stop a behaviour. A strong superego will mean that a person feels guilt for their actions and this level of guilt means that they are unlikely to do something they think will affect others in a negative way (for example, a crime).

This psychodynamic explanation says that if a superego has not developed properly then the conscience and ability to stop behaviour do not develop fully either, making the person more likely to commit a crime. There are three ways that a superego can underpin crime:

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As the superego is a psychodynamic concept, it is tested using projective tests such as the ink blot test and using dream analysis. These methods are criticised for their validity. Why is the validity an issue?

1 **Deviant superego**. This focuses on the concept of identification, which occurs during the phallic stage (see pages 445–446), when the superego is developing. The argument is that the small child identifies with the same-sex parent to resolve their Oedipus complex (in the case of boys) or their Electra complex (in the case of girls). Identification means adopting similar behaviour to the same-sex parent and clearly, if that behaviour is deviant in any way, the small child adopts similar behaviours and morals.

2 **Overdeveloped superego**. This superego has not had an issue with developing as such, it is more that the superego is very developed and therefore the individual feels large amounts of guilt most of the time. This would seem to suggest that the person is less likely to commit crime, but the psychodynamic argument is that crime serves as a release from the overwhelming feelings of guilt. However, this relief is argued to occur only when the criminal is caught and punished. The punishment is a way of relieving the conscience. In other words, the punishment makes the individual feel better.

3 **Underdeveloped superego**. An underdeveloped superego can occur if there have been issues for the individual between the ages of approximately four and six when the superego is developing. If it does not develop sufficiently, the ability to feel guilt and stop behaviour is impaired. This leaves the person to be dominated by their id impulses. The id is the part of the personality that acts in a selfish manner and pursues pleasure. This can clearly lead to criminal activity.

Maternal deprivation hypothesis

In Bowlby's 1965 work *Child Care and the Growth of Love*, he argued that the early years were vital in shaping the adult personality. If they receive love and care from their primary attachment figure then they will grow to be able to develop strong positive attachments for the rest of their lives. However, if a child does not receive this secure start in life, they are likely to be affected for the lifespan with issues in forming relationships.

If there is disruption (for example, a separation) in the relationship with the primary caregiver, this is said to be maternal deprivation. This means the child will form a negative representation of the world as a hostile place and they will struggle to form attachments. This could, it is argued, lead to delinquent behaviour as they grow.

CLASSIC RESEARCH

Bowlby's 44 thieves study of maternal deprivation (1944)

Aim

To test the maternal deprivation hypothesis by looking at a delinquent population to see whether separation had been experienced.

Procedure

Bowlby interviewed 44 juvenile delinquents who had been caught stealing from a psychiatric facility (the 'thieves') and 44 'controls' who were also at the facility but had not stolen (the 'controls').

Bowlby, as the psychiatrist, interviewed the children and mothers separately.

He interviewed the juveniles first to ascertain their personalities. Bowlby diagnosed affection-less psychopathy where there was a lack of affection for or empathy to others. He also established whether they felt a lack of guilt or shame at their actions and that informed the diagnosis.

The families were interviewed to determine whether the thieves had had prolonged early separations from their primary caregiver in their first two years of life.

Findings

The results were as shown in Table 14.5.

Had they been involved in offending behaviour?	Yes				No	
	44 Thieves				44 Controls	
Diagnosed as affectionless psychopaths?	Yes		No		No	
	14		30		0	
Had they been separated from primary caregiver for 6+ months before the age of two?	Yes	No	Yes	No	Yes	No
	12	2	5	25	2	42

Table 14.5 Bowlby's 44 thieves study of maternal deprivation (1944)

Conclusions

The results seem to indicate that:

- if a child has experienced early separation from the primary caregiver for more than six months then the chance that they will become delinquent is greater
- if a child has experienced early separation from the primary caregiver for more than six months then they are more likely to be affectionless psychopaths.

Bowlby drew conclusions that the maternal deprivation can, to some extent, explain offending behaviour.

Evaluation

- This study was influential and supports the psychodynamic explanation of offending behaviour, but has been heavily criticised for its methodology and potential bias.

Defence mechanisms

Defence mechanisms are used by the unconscious mind to reduce anxiety. This is because psychodynamic theorists believe that anxiety will weaken the ego, and the id or the superego will become dominant.

There are many defence mechanisms, with several implicated in offending behaviour:

- **Displacement** – this is when the focus of a strong emotion is shifted from its actual target to a neutral target. In terms of offending behaviour an example of this might be a young man fighting a stranger in a pub because he is really angry with his parents.
- **Sublimation** – this is when a strong id impulse is expressed in a more socially accepted way, such as a football supporter wanting to murder but instead getting involved in football hooliganism. This still is not socially acceptable but is seen to be a diluted expression of the unconscious desire.

- **Rationalisation** – this is explaining behaviour in a rational and acceptable way when it is actually very negative. Offenders use this defence mechanism as a form of justification for their crime. An example would be someone who kills sex workers because that person believes they are a threat to a civilised society.

Research

Blackburn (1993) reported that negative childhood experiences and parent–child relationships were influencing factors upon criminal behaviour, which gives a degree of support to psychodynamic explanations.

Megargee (1966) assessed case studies of violence carried out by usually non-violent individuals – for example, a usually polite, quiet, non-aggressive 11-year-old boy who stabbed his brother 34 times. It was concluded such crimes were carried out by people who share a common characteristic of an inability to express their anger in usual harmless ways and who then 'explode' violently over trivial issues. Such cases are explicable by reference to psychodynamic explanations, giving some support to the theory.

Hoffman (1975) performed a study where children had to resist temptation, and found little evidence of gender differences. This reduces support for the psychodynamic explanation, as there should be a gender difference in order to explain why the male prison population is much higher than the female one.

Evaluation

- There is a shortage of scientific research testing these ideas and therefore they are not well supported. The concepts (e.g. phallic stage, superego) upon which they are based are also not scientifically supported and this means the theoretical grounding on which the explanations are based is flawed.
- Research support for the maternal deprivation hypothesis comes from Bowlby's 44 thieves study. However, this is a retrospective study which was interpreted by Bowlby himself, so the results may be influenced by flawed memories and experimenter bias.
- Many of the theoretical concepts such as defence mechanisms are believed to generate from the unconscious mind and this means that they are scientifically untestable.
- There are many examples of individuals who have experienced problems in their early childhood and have not become criminals. This suggests that even if the explanations are correct, they are not applicable to everyone.

STRENGTHEN YOUR LEARNING

1. Explain Eysenck's theory of offending behaviour.
2. What strengths does Eysenck's theory have?
3. Outline evidence to suggest that the level of moral reasoning may affect offending behaviour.
4. Explain what is meant by hostile attribution bias.
5. Explain what is meant by minimalisation.
6. How does differential association theory explain offender behaviour?
7. How does the development of the superego affect offending behaviour?
8. Outline two weaknesses of the psychodynamic theory of offending.

ASSESSMENT CHECK

1 Select from the stages A, B and C below to complete the table relating to the levels of Kohlberg's theory of moral understanding. One level will be left over. **[2 marks]**

A Law and order stage

B Punishment stage

C Social contract stage

Levels of Kohlberg's theory	Stage of Kohlberg's theory
Pre-conventional morality	
Conventional morality	

2 A researcher measured the extraversion scores of offenders and non-offenders as part of their research. The mean of the non-offenders' scores on the scale developed by the researcher was 12 and the mean of the offenders' scores was 14. The scale ran from 0–26.

Sketch an appropriate graph to show the mean scores of each group. Label the axes and mark on the positions of the mean for each group. **[4 marks]**

3 'It can be argued that criminals are born, not made.'

Using your knowledge of the genetic explanation for offender behaviour, explain why offenders could be born with a predisposition to commit crime. **[4 marks]**

4 Outline two personality characteristics thought by Eysenck to be implicated in offender behaviour. **[4 marks]**

5 Discuss neural explanations for offending behaviour. **[16 marks]**

14.4 Dealing with offending behaviour

'To have once been a criminal is no disgrace. To remain a criminal is the disgrace.'

Malcolm X (1957)

The aims of custodial sentencing

Custodial sentencing is when an offender is found guilty in court and as punishment spends time in a prison (or young offenders' institution). It would be easy to say that the sole purpose of custodial sentencing therefore is to punish the offender. However, it is argued to serve many functions for the offender, victim and society. These functions fall into four categories: **deterrence**, retribution, confinement and **rehabilitation**.

KEY TERMS

Dealing with offending behaviour – the forms of action used to address and counteract individuals performing criminal offences

Aims of custodial sentencing – the aims of the criminal justice system in imprisoning offenders for their actions

Custodial sentencing – a prison sentence

Deterrence – a method of stopping someone doing something (in this context it is used regarding crime prevention)

Rehabilitation – to change the behaviour of an offender to being a non-offender

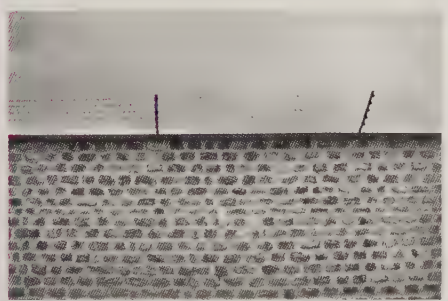

Figure 14.8 Custodial sentencing serves several purposes

Deterrence

This is the idea that prison serves to prevent criminals reoffending. It works on the simple, behaviourist principle that prisoners will learn that crime is punished and therefore they will not want to commit a crime again. Recidivism, which is reoffending, is discussed later in this chapter and can be used to measure whether the aim has been met or not.

Retribution

This, as an aim, focuses on the feelings of the victim(s), their close family, friends and society generally. It is the idea that if the offender has 'hurt' someone else, they should pay for their actions in some way. By sending them to prison they lose their freedom and this is seen as a necessary consequence of their actions. It is sometimes argued that this is the main reason why prisons exist as statistics indicate that it does not serve to prevent reoffending.

Confinement

While in prison or a young offenders' institution the offender is not free to commit other crimes. This aim is known as confinement. Some offenders, such as violent offenders or sex offenders, are seen to pose a threat to society. By putting them in prison for a period of time they are no longer a threat to society.

Rehabilitation

It is argued that a prison sentence allows for rehabilitation of the offender so they are less likely to reoffend. Counselling and offender programmes are offered within prison. If successful, this offers the chance for the offender to sort problems or learn skills to mean that they are in a better position to lead a crime-free life once released.

Research

The Prison Reform Trust Bromley Briefings (2018) reported that reoffending rates for those receiving prison sentences of less than 12 months was 63 per cent, while for those receiving community orders this figure was only 56 per cent and for those receiving suspended sentences it was 54 per cent. This

suggests there are better options for deterrence than sending criminals to prison for criminal offences.

The Ministry of Justice (2018) reported that the number of people recalled back to custody has increased, particularly amongst women. 8,825 people serving a sentence of less than 12 months were recalled to prison in 2017. This again suggests that custodial sentencing is not an effective deterrent to reoffending.

Ofsted (2014) reported that offenders who attended meaningful vocational training in prison were more likely to secure employment shortly after release, which lowered chances of reoffending. This suggests that custodial sentencing can rehabilitate offenders if vocational training is oriented at teaching work skills.

HM Chief Inspector of Prisons (2017) reported that work schemes in many prisons were boring, repetitive and rarely linked to resettlement objectives. The skills that prisoners developed while in jail often went unrecorded and so failed to help their employment chances when released. This suggests that the aim of rehabilitation through custodial sentencing is often not being met.

Evaluation

- It appears, from recidivism rates, that the aims of deterrence and rehabilitation are not fulfilled by custodial sentencing as reoffending rates are high (see Recidivism, later in the chapter).
- The idea that prison serves to rehabilitate is also questionable as it is seen as a potential source of information on how to commit crimes with more skill. It has even been named the 'College of Crime' by some commentators. This means that it possibly has the opposite effect to rehabilitation.
- Retribution and confinement are argued to be the main reason we have prisons in society. They are not seen as a deterrent by some prisoners (Davis & Raymond, 2000) and so the focus of custodial sentencing moves to fulfilling the needs of the victim and society. They do provide a method of punishment that the legal system can administer and they ensure that the offender cannot commit more crime while they are incarcerated.

The psychological effects of custodial sentencing

'Solitary confinement is too terrible a punishment to inflict on any human being, no matter what his crime. Hardened criminals in the men's prisons, it is said, often beg for the lash instead.'

Emmeline Pankhurst (1912)

The idea of psychological effects from a custodial sentence should come as no surprise. Indeed, the fact that prison is designed to act as a punishment means that it is predicted, by the principles of operant conditioning, to have an effect. However, there are other potential psychological effects, such as the offender becoming institutionalised, negative effects on mental health and potentially an increase in aggressive behaviour.

KEY TERM

The psychological effects of custodial sentencing – the impact on mental health and the behaviour of those imprisoned by the criminal justice system

Becoming institutionalised

Inmates can become institutionalised and this has an effect on their behaviour. The participants in Zimbardo's 1971 Stanford Prison Study (see page 13) illustrated that individuals become influenced by the setting and lose their confidence to act.

Prisoners can also become institutionalised due to their background and living conditions they have 'on the outside'. If they are homeless or have a poor standard of living they might like the routine of prison and the fact that they have a bed, a roof over their head and food available to them. If this is the case then they will be likely to reoffend just so they can get back into prison.

The psychological effect of prison for some, then, is positive. Prison is not a punishment but acts more as a positive reinforcement for offending behaviour.

Negative effects on mental health

The Stanford Prison Study (Zimbardo, 1971) showed how being incarcerated can have a negative effect on the well-being of the individual. There has been particular focus on the levels of suicide in prison as they stand at a higher rate than suicide rates out in the community (Crighton, 2006). Crighton & Towl (2008) observed that numbers of suicides among offenders in prison have increased of late in the UK. Factors suggested are overcrowding, low staff-to-offender ratio, lack of access to medical services and physical exercise, together with the increased risk of physical assault. It also appears that settling into the new environment is an issue as the risk of suicide among offenders is greater in the first 30 days of incarceration, so the adjustment required for some prisoners is evidently too much.

Another indication that prisoners' mental health is affected negatively is the fact that there are increasingly high levels of self-harm among offenders. This could be due to the frustration of being incarcerated and/or an attempt to regain control.

Research

Zimbardo's Stanford Prison Study (1971) illustrates the effects incarceration can have on individuals. The mental health of one participant was affected so much that he had to withdraw from the study. This may have occurred because of the withdrawal of freedom and treatment from the 'guards'. Caution should be used in generalising to real prisons from this study, however, as the setting was experimental and therefore ecological validity is low.

Snow (2006) examined the characteristics of prisoners who self-harm and compared them with those who are suicidal. She found that the offenders who self-harm are qualitatively different to those who commit or attempt to commit suicide in that the self-harmers display high levels of anger and stress whereas the ones who are suicidal withdraw and show signs of depression. Both, however, are displaying psychological effects of being in prison and a decline in mental health.

Cheeseman (2003) found that many aggressive incidents in prison occurred due to the need to relieve stress. This suggests that aggressive incidents in prison could be due to the surroundings being highly stressful, so the aggression is an effect of the circumstance.

Hollin (1992) stated in his research that there was evidence to suggest that prison became 'home' to some prisoners. The fact that they received three meals a day together with a bed and companionship was preferable to them than what they had to deal with outside of prison.

Evaluation

- It is difficult to know whether the mental health issues within prisons are due to the context or whether they were already part of the individual. It could be that the offender committed a crime due to their mental health. It would therefore be an error to state that it is an effect of the prison setting. For example, aggressiveness could be due to the people who are put in prison, and they could have displayed high levels of aggression prior to incarceration. A full discussion of the reason behind aggression levels in prison can be found in Chapter 13, page 565.
- It is argued by some that a decline in mental health is necessary for the individual to be punished in prison. They state that is a necessary consequence of the situation and that if prison did not have a negative effect it would not be effective.

PSYCHOLOGY IN THE REAL WORLD

Figure 14.9 It is important to consider the mental health of offenders

Offenders with poor mental health

There is much research to suggest that the mental health of prisoners is, in part, what underpins high rates of recidivism.

In a report by Coid *et al.* (2007), the mental health of prisoners had a direct effect on recidivism rates. The researchers found that offenders in the UK who received treatment for their mental health problems while in prison were 60 per cent less likely to reoffend than untreated prison inmates. They were also significantly less likely to commit violent acts than untreated inmates. Indeed, Coid *et al.* found that they were 80 per cent less likely to commit violent acts.

There are moves globally to consider what the mental health of an offender is like as they start their prison sentence. Treatments are then put in place, where possible. There is also a move within the USA to introduce 'mental health courts', which are designed to treat mentally ill offenders who cannot plead guilty by reason of insanity. Offenders within these courts are sentenced and administered treatment but are not given custodial sentences.

Recidivism

The rates for **recidivism** are a cause for concern. In the 'proven' reoffending statistics for October 2011 to September 2012 for England and Wales (published in July 2014):

- 573 000 adult and juvenile offenders were cautioned, convicted or released from custody
- 149 000 (26 per cent) of these committed a proven reoffence within one year. It is possible that more have committed offences but not been caught
- 438 000 proven reoffences were committed within a year, with an average of 2.9 offences per offender.

KEY TERM

Recidivism – reoffending following judicial punishment; committing the same, or another, crime again

These rates are concerning as it appears the purpose of prison in terms of prevention of crime works for only some prisoners. There are several proposed ideas as to why recidivism rates might be high: becoming institutionalised, non-adherence to behaviourist principles and mental health/addiction issues.

Prisoners becoming institutionalised

There is an issue with prisoners getting used to being in prison and their day being organised. Their basic physiological needs are met and they have a sense of belongingness as there are fellow inmates in a similar position. If they come from a home environment where their daily life is a struggle, it is easy to see how offenders might reoffend to go back into prison.

When asked about what would help prevent recidivism, inmates report that support following release is the main way it can be prevented. Offenders state they need better employment prospects, help reintegrating into family life and relationship counselling.

Non-adherence to behaviourist principles

Behaviourist principles state that the greatest amount of effect for punishment or reinforcement is if it is received at the same time as the action. This is time contiguity. Sentencing occurs some time later than the actual crime is committed, so the action and punishment do not coincide. The argument is that the connection between the two is therefore weaker. The strength of the association should be strong to be effective.

Mental health and addiction issues

The likelihood of reoffending can be increased if an inmate's mental health is unstable. This could be prompted by the prison situation (see page 567) or they could already be suffering prior to conviction. Poor mental health, especially addiction disorders, is related to crime rates, so the problem, if not treated in prison, makes an offender vulnerable to reoffending (see Psychology in the real world, page 615).

Research

Malott & Fromader (2010) conducted a survey with 102 Australian male offenders asking them about how they felt about release from prison and what they felt would reduce the likelihood of recidivism. They found that the offenders felt unsupported upon release and said that a greater level of accessible resources, treatment and/or support services after release would help reduce their recidivism. This supports the idea that offenders can feel institutionalised and that by reoffending they re-enter an environment that is organised for them rather than an unsupported outside environment.

Hanson & Bussiere (1998) looked at the reason why sexual offenders reoffended. The rates were low at 13.4 per cent, but the main indicators for the likelihood of reoffending were found to be lack of completion of treatment within prison and the level of sexual deviancy. They found that other factors, such as age, prior offences and level of juvenile delinquency, predicted recidivism, similarly to non-sexual offender populations. This indicates that clear groups can be identified at risk, which suggests the same underlying reasons for reoffending are occurring.

Cartier *et al.* (2006) researched the link between drug abuse and recidivism rates. They found a clear relationship between substance abuse and reoffending rates, although interestingly this was not linked to violent offences. This suggests that a mental health issue such as an addiction, if not treated within the prison system, can lead to reoffending.

YOU ARE THE RESEARCHER

Recidivism is clearly an issue in the UK. Imagine you have been given the job by the government to run a research project to establish why the rates are so high.

How would you go about this? What method would you use to collect your data and why?

Evaluation

- Self-report measures from offenders are problematic as offenders may not be able to reliably report why they have reoffended. There may be an inclination to adopt an external locus of control where they see issues with the system, rather than themselves, as being the reason they have reoffended. Trammel (2002), in her work looking at reoffending rates and locus of control, did indeed find that reoffenders were more likely to have an external locus of control.
- Although it can be said that custodial sentences do not work as deterrents, because of recidivism rates it is important to consider the other reasons why prisons are used. These include retribution and confinement. It is possible that recidivism rates are high and will remain so because society requires the offender to be kept out of society (confinement) and that they pay for their crime (retribution).
- It is important to consider that the recidivism rates may be due to the 'outside world' rather than prison and that until societal problems such as poverty and lack of support for mental health are addressed, the recidivism will remain high. Most research is centred on the prison rather than the post-release environment.
- Figures for recidivism are based on proven crimes that have been put through the court systems. The figure is likely to be higher as some reoffences will go undetected or will never reach court. Therefore, although rates are thought to be high, the numbers are inaccurate and will probably be greater.

Behaviour modification in custody

Behaviour modification programmes are one of the methods used in rehabilitation of prisoners. Behaviour modification adheres to the principles of behaviourism, specifically operant conditioning. The idea is to increase the desirable behaviours and decrease the undesirable behaviours using positive reinforcement, negative reinforcement and punishment.

In the controlled conditions of a prison, reinforcement schedules can be imposed and there are a restricted number of options for reward. Most behaviour modification programmes are based around a token economy

KEY TERM

Behaviour modification in custody – an approach based on operant conditioning which seeks to replace the criminal behaviours of offenders with more socially acceptable ones, through the use of reinforcements

system. So, when good behaviour occurs, prisoners 'earn' tokens which can then be exchanged for desirable goods such as cigarettes or food. This kind of programme was first used with the mentally ill (see pages 495–6) and then in the 1960s the principle was applied to prisoners. This is simply using the principle of positive reinforcement to try to make sure the good behaviour continues and undesirable behaviour is stamped out.

There is also the threat of taking back tokens from prisoners when they have behaved badly. This is negative reinforcement and when working with the positive reinforcement of gaining tokens can be a powerful tool to modify behaviour.

Research

Rice (1990) examined the outcomes from 92 prisoners on a token economy programme in a maximum-security psychiatric hospital and found two things: 1) that if it was effective for an individual then it continued to be so while in the institution, 2) the success shown within the institution had no influence on the offender's outcomes once released. This seems to suggest that it works for certain individuals only and only short term. It also means that the programme has no rehabilitative benefits.

Reppucci & Saunders (1974) found that although behaviour management programmes should, in theory, be easy to run, they are not. This was due to institutional pressures, limited resources and inconsistency with staff. There were instances of the 'rules' being adapted, which weakened the impact.

Hobbs & Tyllon (1976) found that introduction of a behaviour modification programme in three young offenders' institutions reduced the amount of undesirable behaviour within the institution when compared with an institution that had no such programme. This demonstrates the short-term benefits that behaviour modification can have.

Evaluation

Behaviour modification programmes work well in the short term but there is little evidence to suggest they work once an offender has left the institution. This means they have limited rehabilitative effect, which is not the aim of the programme. The reason for this lack of transfer to the 'real world' may be due to prison being a very controlled environment; also possibly because the reward (and punishment) needs to be administered immediately, which is not possible out of prison.

Behaviour modification programmes have received criticism for contravening human rights. There is not an issue with the administration of positive reinforcement but with withholding such things as visits from relatives. These are seen as a right for prisoners and therefore withholding them is not a reasonable action within a civilised society.

Behaviour modification takes little training or expense to use within an institution. This makes it one of the cheaper options available and it is also easier to introduce as there is less issue with staff being skilled to administer it, unlike other interventions such as anger management.

Anger management

Anger management is a cognitive intervention that aims to help offenders control their feelings of anger. Many crimes have the emotion of anger as their root cause and so this intervention is designed to prevent anger prompting criminal acts.

The anger management training is based on offenders learning and practising skills. This is focused on controlling impulses and anger. Anger management programmes follow a three-stage process:

1 **Cognitive preparation**. This is where an offender will spend time understanding what makes them angry and identifying triggers that are liable to make them react with anger. This means talking to an anger management therapist to remember experiences of anger and what led to that feeling. This is a very individualised part of the training as the cues for anger vary from person to person and it is vital to know what situation will make the angry feeling escalate.

   It is recognised by anger management therapists that it is almost impossible to stop someone feeling angry, but it is possible to mediate the anger and prevent it from escalating.

2 **Skill acquisition**. The content of this second stage is dependent on the individual's response to the first. There are skills that can be taught, such as relaxation techniques and assertiveness techniques. Social skills training is invaluable as anger can stem from frustration at being unable to communicate in a social situation. This section is designed to fit offenders' individual needs, which are identified from the first stage.

3 **Application training**. The final stage is designed to provide an opportunity for offenders to practise their newly acquired skills. This can be done using role play in both realistic and imaginary situations. The idea is that offenders are prepared in future for situations that might have been an issue for them in the past. Using the new skills they have learned, the situation will no longer lead to criminal acts. They will be able to respond in a non-aggressive way.

Research

Ireland (2000) used a questionnaire to measure two levels of anger before and after 50 prisoners completed an anger management programme involving 12 hours' worth of intervention spread out into one-hour intervals over three days. There was a 92 per cent reduction in anger levels for at least one of the measures, which suggests the technique to be effective.

Howells *et al.* (2005) measured the success level of an anger management programme with violent offenders. They found that the programme reduced anger, but not to a statistically significant level. Success was more apparent in offenders who were willing to take part. This suggests the technique has some effectiveness, especially in those willing to engage with the treatment.

Koons *et al.* (1997) examined the factors that seemed to contribute the most to anger management interventions with offenders. They found that offenders and practitioners both suggested that an individualised programme was effective together with the way it was delivered by staff. It seems the trainers needed to be selected carefully to give the programme every chance of success.

KEY TERM

Anger management – a form of cognitive intervention that seeks to help violent offenders, by teaching them skills to control the aggressive impulses that motivate their criminal behaviour

Figure 14.10 Anger management can be an important tool in crime prevention

Evaluation

- Practising anger management skills in a role-play situation may be too different from real life. The level and intensity of emotion are greater in a real-life situation, so the offender could find that the ability to apply the skill is hindered and they revert to their former behaviour.
- It is difficult to measure how successful an intervention has been. Levels of recidivism are one such measure, but there are many possible reasons why someone may reoffend, so any repeat of criminal behaviour may not be due to the failure of the anger management programme. Using recidivism as a measure is also problematic because it only measures when a person is reconvicted. This means that the intervention may not be working on a day-to-day basis and this failure is not picked up.
- There is a lack of evidence that anger management programmes work well long term. It is possible that the effects are short term only and this means that the offender is in danger of reoffending at some point.
- Anger management gives offenders insight into how they think and can help them gain an understanding of problems in their thinking which have led them to offending behaviour in the past. It is possible that a cognitive intervention such as anger management can make them function better in everyday life because of the insight gained from the intervention.
- As with all cognitive interventions, an offender must be motivated and engage fully with the programme. It is difficult to change thought processes that are deeply entrenched, so motivation and a willingness to try hard are pivotal in its success. Some offenders do not have this focus and so for them the intervention does not work well.

Restorative justice programmes

KEY TERM

Restorative justice – where an offender meets with a victim and tries to make amends for the crime committed, thus helping the offender avoid further bad behaviour

Restorative justice is a relatively new type of intervention with offenders. The aim is to make the offender realise the implications of their actions for the victim or victims and to improve their relationships with the victims and community by repairing the harm they have caused. This method also addresses some of the needs of the victim(s) to improve their recovery from the crime.

Restorative justice can be used instead of a custodial sentence, but it is also used alongside a custodial sentence in more serious crimes. The first step is to seek cooperation from both the victim and the offender. It will not work if one or other party is not interested in being involved. It should also not cause any further trauma to the victim, so it is important that they are happy to be involved.

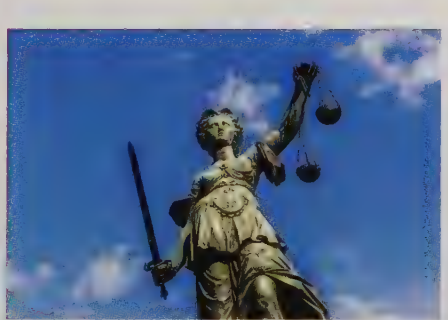

Figure 14.11 Restorative justice aims to make offenders realise the implications of their actions

Face-to-face meetings, mediation or indirect mediation are set up so that the offender and victim can communicate in a controlled setting. What happens in those meetings varies with the circumstance and the individuals involved. The victim is usually able to ask for answers to any questions they might have and to say what they want to say to the offender in a neutral setting.

There is also the potential to use practical reparation in restorative justice programmes. This means that the offender repairs the damage they may have done to property, for example painting over graffiti. This can be used when there is vandalism to property and it ensures that the community sees that the 'wrong' against the community is rectified.

Research

Miers *et al.* (2001) examined the extent to which victims felt happy with restorative justice programmes. The majority of victims were happy with the outcome, although some were cynical about the offenders' sincerity and their motivation for taking part, i.e. they were doing it to reduce their sentence. Some also found that it made uncomfortable feelings resurface and some victims found it intimidating.

Sherman & Strong (2007) looked at the perspective and judgement of offenders. Offenders reported that they found restorative justice programmes beneficial and there was a decrease in reoffending rates following the use of restorative justice.

Latimer *et al.* (2012) reviewed evidence to find that research indicated reoffending rates are lower and both victims and offenders report high levels of satisfaction with the technique. This suggests restorative justice programmes to be effective in reducing the negative effects of criminal behaviour.

Evaluation

- Restorative justice is considerably cheaper than a custodial sentence so it is a popular sentencing option. It is also advantageous practically (as a form of reparation) and psychologically helpful to the victim.
- There is potentially a problem with the satisfaction levels expressed by victims and offenders. There is a self-selection bias in that both parties need to be willing to enter the programme. It may be that the restorative justice programme works really well for certain individuals but cannot be used for everybody. This limits the applicability of this type of punishment.
- There are high drop-out rates with restorative justice programmes. This may be because both victim and offender find it harder to complete than they originally thought. It may also be, in the case of the victim at least, that it is not fulfilling what they wanted to achieve.

ON THE WEB

A film of the victim's viewpoint of restorative justice programmes can be seen at **www.youtube.com**. Search for 'Victim's voice – restorative justice helps victims'.

Many YouTube clips on restorative justice programmes are available if you are interested in hearing what both the victims and the offenders have to say.

STRENGTHEN YOUR LEARNING

1. Explain the aims of custodial sentencing.
2. What are the proposed psychological effects of custodial sentences for the offender?
3. Outline evidence to suggest why recidivism occurs.
4. Explain what is meant by behaviour modification of offenders.
5. Outline evidence to support the use of anger management with prisoners.
6. Explain what restorative justice programmes entail.

ASSESSMENT CHECK

1 Select from the descriptions of therapist actions A, B and C below to complete the table relating to the stages of anger management. One description will be left over. **[2 marks]**

A Offenders learn new skills to help them combat their feelings of anger

B Offenders rehearse how they might act in a situation that might make them angry

C Understanding of triggers to angry outbursts is established

Stages of anger management	Description
Cognitive preparation	
Application training	

2 To investigate the effectiveness of a behaviour modification programme, psychologists observed the behaviour of prisoners at meal times which they had noted was a particularly difficult time and a time when there was a higher than average number of violent incidents. They used behavioural categories to assess the number of aggressive acts both before and after the programme had been used.

Explain how the psychologists could test the data for reliability and outline what steps could be taken to ensure the data was as reliable as possible. **[1 + 2 marks]**

3 Read the following item and then answer the question:

Statistics show that the rate of recidivism in the UK is high, suggesting prison does not work.

Use your knowledge of recidivism to explain why criminals might re-offend. **[4 marks]**

4 Discuss the effectiveness of anger management in treating offenders. **[4 marks]**

5 Describe and evaluate the use of behaviour modification in custody to deal with offending behaviour. **[16 marks]**

SUMMARY

Offender profiling

- There are two types of offender profiling: top-down and bottom-up. Top-down profiling is where the experience and intuition of the profiler is used to build a profile and is sometimes called the typological approach. Characteristics of the profiler are derived from the crime scene.
- Bottom-up profiling uses geographical information and investigative profiling to build a picture of the offender. Previous information on similar crimes is used and the profile is not affected as much by the profiler conducting the investigation as with top-down profiling.

Biological explanations of offending behaviour

- Atavistic form is an early biological explanation for offender behaviour which is based on the idea that the physical features of an individual can show a genetic predisposition to be a criminal. This is due, it is argued, to the individual being less 'civilised' in evolutionary terms.
- Twin, family and adoption studies suggest there may be a genetic predisposition to offender behaviour. This is because concordance rates for monozygotic twins are higher than dizygotic twins, crime rates are greater in certain families and data from adoption studies suggests a genetic influence.
- There are three neurotransmitters that are implicated in offending behaviour; high levels of noradrenaline, low levels of serotonin and dopamine due to its links to addiction.
- The neural explanation for offending behaviour focuses predominantly on the limbic system and how it may affect processing of emotion and empathy. There is also some research that suggests that brain development in the frontal lobe is implicated in offender behaviour.

Psychological explanations of offending behaviour

- Eysenck's theory of personality suggests high levels of extraversion, neuroticism and psychoticism are linked to criminal behaviour. He also suggested that there was a biological underpinning to these characteristics.
- Kohlberg's levels of moral reasoning are also thought to be linked to the likelihood to commit crime. Those in the pre-conventional stage are thought to be more likely to become an offender as they think about themselves rather than others.
- Attribution theory is a cognitive theory that considers the reasons people ascribe to behaviour. They make either internal attributions or external attributions. If attributions are external and hostile they are more likely to lead to criminal behaviour.
- Minimalisation is a form of self-denial which allows the offender to downplay the effects of their offences. It is a cognitive strategy which helps the offender deal with the guilt they experience. It seems to be evident in some groups of offenders more than others; for example research shows a strong presence of minimalisation in sex offenders.
- Differential association theory states that the environment a person grows up in predisposes them to crime. This is because some people are exposed to a higher number of positive messages (favourable differentiations) to committing crime.

Dealing with offender behaviour

- Psychodynamic explanations for offending behaviour focus on poor development of the superego. The superego can be deviant, overdeveloped or underdeveloped. Defence mechanisms such as displacement, sublimation and rationalisation are also implicated.
- The aims of custodial sentencing are deterrence, retribution, confinement and rehabilitation. However, the psychological effects include becoming institutionalised, negative impact on mental health and aggressive behaviour.
- Recidivism is a cause for concern in the UK. The main reasons thought to be accountable for the high recidivism rates are prisoners becoming institutionalised, non-adherence to behaviourist principles and mental health/addiction issues.
- Behaviour modification is based on behaviourist principles of operant conditioning and looks to reward good behaviour and punish poor behaviour in prison. This is often through the use of a token economy.
- Anger management programmes use cognitive techniques to alter offenders' thought processes so that they can cope better with their anger and avoid reoffending.
- Restorative justice programmes are a new technique of helping a victim come to terms with a crime and for an offender to realise the effects their crime has had on a victim, their family and society. This is facilitated by organised supervised meetings between a victim and an offender.

Glossary

Abnormality – a psychological or behavioural state leading to impairment of interpersonal functioning and/or distress to others

Absence of gating – the lack of limiting factors upon the formation of virtual relationships that form barriers to the creation of physical relationships

Absorption-addiction model – where an individual's fascination with a media personality progresses to a delusion of a real relationship

Abstract – a division of a write-up of a psychological report that summarises the research

Accommodation – altering existing schemas to fit in new experiences

Active processing – subjecting information to deep and meaningful analysis

Addiction – the condition of being dependent upon a particular substance or activity

Adrenal gland – the gland in the adrenal system that releases adrenaline

Adrenal medulla – the central part of the adrenal gland

Affectionless psychopathy – an inability to show affection or concern for others

Agentic state – the way in which an individual may obey an order, perhaps to do something that they see as 'wrong', because the individual hands over the responsibility for the outcome of the action to the authority figure. The individual sees themselves as acting as an agent for the authority figure and therefore does not feel responsible

Aggression – behaviour intended to intimidate or harm others

Aim – a precise statement of why a study is taking place

Aims of custodial sentencing – the aims of the criminal justice system in imprisoning offenders for their actions

Aims of piloting – to identify and amend methodological flaws and create an indication of what results to expect

Alpha bias – the attempt to exaggerate the differences between the genders

Amygdala – an area of the brain within the limbic system which processes emotion

Androcentrism – a bias in psychological research in which a male perspective is overemphasised at the expense of a female one

Androgyny – co-existence of male and female characteristics within the same individual

Anger management – a form of cognitive intervention that seeks to help violent offenders, by teaching them skills to control the aggressive impulses that motivate their criminal behaviour

Animal studies of attachment – research conducted on animals that reveals insights into the origins and functions of attachment behaviour in humans

Anorexia nervosa – an eating disorder characterised by the desire to keep body weight as low as possible, often through restriction of food intake

Anxiety – an unpleasant state of emotional arousal that can affect the memory of events experienced

Aromatase – an enzyme which helps metabolise (or process) testosterone

Articulatory process (AP) – part of the phonological acoustic store, allows sub-vocal repetition of information within the store

Assessment of validity – the means by which validity can be determined

Assimilation – fitting new environmental experiences into existing schemas

Atavistic form – an explanation for criminal activity that sees offenders as representing a more primitive evolutionary stage of development, which is shown by specific facial and physical features

Attachment – a two-way, enduring, emotional tie to a specific other person

Attachment theory (parasocial relationships) – the tendency for parasocial relationships to be formed by those with insecure childhood attachments

Atypical antipsychotics – a class of neuroleptic drugs produced later, used to treat schizophrenia

Atypical sex chromosome patterns – individuals with sex chromosome patterns other than XX or XY

Auditory centre – brain area associated with the perception of sound

Authoritarian personality – description of a person who holds rigid beliefs, is intolerant of ambiguity, submissive to authority and hostile to those of lower status or members of an out-group

Autism – a developmental disability characterised by problems in communicating and building relationships with others and in using language and abstract concepts

Autonomic nervous system – division of the PNS that transmits information to and from internal organs to help sustain their processes

Autonomous state – opposite side of the agentic state, where individuals are seen as personally responsible for their actions

Autonomy and control – the perception of anorexia nervosa as a struggle for self-management, identity and effectiveness

Avolition – a general lack of energy resulting in loss of goal-directed behaviour

Baillargeon's explanation for early infant abilities – a theory that sees children as able to understand the properties of objects and their relationships to each other from an early age

Bar charts – a type of graph for presenting non-continuous quantitative data

Behaviour modification in custody – an approach based on operant conditioning which seeks to replace the criminal behaviours of offenders with more socially acceptable ones, through the use of reinforcements

Behavioural approach (to phobias) – the perception of phobias as occurring through learning processes with treatments based upon modifying maladaptive behaviour through substitution of new responses

Behavioural categories – dividing target behaviours into subsets of behaviours through use of coding systems

Behavioural explanation of phobias – a theory that sees phobias as acquired and maintained through environmental learning experiences via the two-process model

Behavioural interventions – treatments of addictive behaviours based upon learning theory through the use of conditioning processes

The behaviourist approach – a means of understanding behaviour that focuses upon the effects of environmental stimuli upon observable responses through classical and operant conditioning

Behaviourist treatment of phobias – therapies for the removal of phobias based upon the use of conditioning techniques to replace fear responses with feelings of calm

Bem Sex Role Inventory – a self-report measure of masculinity–femininity and gender role

Benzodiazepines – anti-anxiety drugs that dampen down the activity of the nervous system, creating a sensation of calm and relaxation

Beta bias – the attempt to downplay the differences between the genders

Beta-blockers – anti-anxiety drugs that block the transmission of nerve impulses, to reduce heart rate and alleviate the physical effects of stress

Bias – the degree to which participants in a sample have been selected without prejudice

Bimodal distribution – where a distribution of data has two modes and thus two peaks occurring within it

Biofeedback – the gaining of awareness and control over bodily functions in order to reduce stress levels

The biological approach – a means of understanding mind and behaviour focused upon the physiological mechanisms of the body, such as genetics, neurochemical imbalances or brain abnormalities

Biological approach (to OCD) – the perception of OCD as determined by physiological means with treatments based upon chemical means

Biological determinism – the viewpoint that behaviour originates from physiological influences alone

Biological explanation of OCD – a theory that sees OCD as determined by physiological means, such as genetics, neurochemical imbalances or brain abnormalities

Biological explanations of offending behaviour – theories that perceive criminal activity as based upon physiological factors of offenders, such as head and facial feature measurements

Biological explanations for anorexia nervosa – theories of anorexia nervosa that see the disorder as resulting from physiological processes, such as through genetic, neural and evolutionary means

Biological explanations for gender dysphoria – the perception that gender dysphoria is physiologically determined

Biological explanations for obesity – theories of obesity that see the disorder as resulting from physiological processes, such as through genetic, neural and evolutionary means

Biological explanations for schizophrenia – theories of schizophrenia that see the disorder as resulting from physiological processes, such as genetics, abnormal dopamine functioning and neural correlates

Biological reductionism – the comprehension of behaviour in terms of its basic physiological components

Biological rhythms – bodily cycles that occur over varying amounts of time

Biological structures – the physiological structures within an individual's body that are seen as integrating with each other to produce one's characteristics and behaviour

Biological treatments of OCD – therapies that seek to address OCD by correcting the physiological abnormalities seen as causing the disorder

Biopsychology – a psychological approach that seeks to explain mind and behaviour as products of an individual's physiological processes

Bipolar depression – a form of depression characterised by periods of heightened moods and periods of despondency and hopelessness

Bottom-up approach – a method by which forensic psychologists use data from previous, similar crimes to create an objective profile of a possible offender

Boundary model – that obesity results from conflict between physiological and cognitive limits on food intake

Brain neurochemistry – a biological explanation that sees the neurotransmitter dopamine as related to nicotine dependency through its elevation of the brain's reward system

Broca's area – brain area associated with the production of speech

Calories – the energy content of food

Capacity – the amount of information that can be stored at a given time

Cardiovascular disorders – dysfunctions of the heart and blood vessels

Caregiver-infant interactions – the mutual exchanges between caregivers and infants that foster and maintain attachment bonds

Causal explanations – where a change in a dependent variable is attributable to manipulation of an independent variable

Central executive (CE) – component of the WMM that oversees and co-ordinates the components of working memory

Central nervous system – part of the nervous system consisting of the brain and spinal cord

Challenge – an element of hardiness characterised by individuals who perceive stressors as goals to be mastered

Characteristics of phobias, depression and OCD – the behavioural, cognitive and emotional symptoms of these mental disorders by which they can be categorised

Chi-squared – a test of difference used for nominal data when an independent groups design has been used (can also be used as a test of correlation for nominal data generated from the same person or event)

Chromosomes – structures of nucleic acids and protein found in the nucleus of most living cells that contain genetic information

Chunking – method of increasing STM capacity by grouping information into larger units

Circadian rhythms – biological rhythms that occur every 24 hours

Class inclusion – an understanding that some sets of objects or sub-sets can be sets of other larger classes of objects

Classical conditioning – a type of learning where a response produced naturally by a certain stimulus becomes associated with another stimulus not normally associated with that particular response

Classical conditioning (and attachment) – the development of an attachment bond due to a caregiver becoming associated with the pleasure that feeding naturally brings

Classical conditioning (and gambling dependency) – the development of gambling dependency is seen as due to specific environmental cues becoming associated with the pleasure that gambling naturally brings

Classical conditioning (and nicotine dependency) – the development of nicotine dependency is seen as due to specific environmental cues becoming associated with the pleasure that smoking naturally brings

Classification of schizophrenia – the diagnosis of schizophrenia by reference to symptoms contained within official classification systems

Code of Ethics – a set of officially approved rules for the conducting of moralistic practices within psychological research

Coding – the means by which information is represented in memory

Cognition and development – a psychological area of interest that focuses upon an individual's intellectual growth

The cognitive approach – a means of understanding the mind that focuses upon the idea that internal mental processes underpin behaviour

Cognitive approach (to depression) – the perception of depression as determined through maladaptive thought processes with treatments based upon modifying thought patterns to alter behavioural and emotional states

Cognitive behavioural therapy – treatment of abnormality that modifies thought patterns to alter behavioural and emotional states

Cognitive behavioural therapy for dependency – a treatment that seeks to replace the irrational thought processes underpinning dependency behaviours with more rational ones

Cognitive behavioural therapy (CBT) for depression – a treatment that seeks to replace the irrational thought processes underpinning depression with more rational ones

Cognitive behavioural therapy (CBT) for OCD – a treatment of OCD that seeks to replace irrational thought processes underpinning the disorder with more rational ones

Cognitive behavioural therapy (CBT) for phobias – a treatment that seeks to replace the irrational thought processes underpinning phobias with more rational ones

Cognitive bias (in gambling) – a cognitive explanation that sees distortions in reasoning about gambling behaviour as leading to addiction

Cognitive dissonance – an unpleasant feeling of anxiety created by simultaneously holding two contradictory ideas

Cognitive distortions – a cognitive explanation that sees criminals using faulty thought processes to justify their criminal behaviours

Cognitive explanation of depression – a theory that perceives depression as determined through maladaptive thought processes

Cognitive explanation of OCD – a theory that sees OCD as caused by maladaptive thought processes that cause individuals to focus on anxiety-generating stimuli and behaviours that reduce such anxieties

Cognitive explanation of phobias – a theory that perceives phobias as being due to maladaptive thought processes that cause individuals to over-focus upon anxiety-generating features of a stimulus

Cognitive explanations for gender development – theories of gender development that focus on how children's thinking about gender changes in qualitatively different stages

Cognitive explanations of offending behaviour – a psychological explanation that sees maladaptive thought processes as underpinning criminal behaviour

Cognitive explanations of schizophrenia – the idea that the development of schizophrenia is related to maladaptive thought processes

Cognitive interview (CI) – a procedure for police questioning of witnesses that promotes accurate, detailed recall of events

Cognitive neuroscience – a combination of cognitive science, cognitive psychology and neuroscience that seeks the biological basis to thought processes

Cognitive priming – the effect of media cues in prompting aggressive behaviour

Cognitive theory (of anorexia nervosa) – that anorexia results from maladaptive thought processes

Cognitive theory (of gambling dependency) – an explanation that sees gambling dependency as occurring due to maladaptive thought processes

Cognitive treatments of depression – therapies that seek to reduce depression by replacing maladaptive thought processes with more adaptive ones that foster a more positive sense of self

Commitment (hardiness) – an element of hardiness characterised by individuals having a sense of purpose in what they do

Commitment (minority influence) – the extent to which a minority group showing dedication to their opinion affects individuals' level of agreement with that opinion

Co-morbidity – the presence of one or more additional disorders or diseases simultaneously occurring with schizophrenia

Comparison of approaches – the contrasting of different psychological schools of thought in order to highlight their similarities and differences

Complementarity – the ability of individuals to meet each other's needs

Compliance – publicly, but not privately, going along with majority influence to gain approval

Computer models – an explanation of cognition that sees the mind functioning as an information processing device (input, process, output)

Concept formation – the sequential stages by which an individual learns to sort experiences into different categories

Concurrent validity – a means of assessing validity that correlates scores on a test with another accepted as being valid

Conditions of worth – requirements an individual believes they must have to be loved

Confederates – (also known as pseudoparticipants and stooges) individuals who pretend to be participants or researchers in research studies, but who are actually playing a part

Conformity – yielding to group pressure (also known as majority influence)

Confounding variables – uncontrolled extraneous variables that negatively affect results

Congruence – a state realised when all three selves (ideal self, perceived self and actual self) are integrated as one (become the same)

Conscious mind – the part of the mind we are aware of

Conservation – an understanding that changing the appearance of something does not affect its mass, number or volume

Consistency – the idea that the more unchanging a minority is in its viewpoint, the more persuasive it will be in changing majority opinion

Content analysis – a method of quantifying qualitative data through the use of coding units

Context-dependent failure – a form of CDF where recall occurs in a different external setting to coding

Continuity hypothesis – the idea that there is consistency between early emotional experiences and later relationships

Contralateral – when the right hemisphere deals with the left-hand side of the body and vice versa

Control (hardiness) – an element of hardiness characterised by having a sense of personal power over events

Control (workplace stress) – the degree of influence an individual has over their workload and job requirements

Controlled observations – surveillance and recording of events occurring under controlled conditions, e.g. Mary Ainsworth's Strange Situation

Core knowledge theory – the belief that humans have an innate understanding of inanimate objects and their relationships with each other

Correlational studies – the factors measured in a correlational study to assess their direction and strength of relationship

Cortisol – a steroid hormone secreted from the adrenal glands in reaction to stress

Counselling psychology – humanistic therapies that seek to foster self-growth in individuals

Co-variables – the variables investigated in a correlation. They are not referred to as the independent and dependent variables because the study is investigating the relationship between them, not trying to show a cause and effect relationship

Covert observations – surveillance of events where participants are unaware of being observed

Covert sensitisation – a behavioural treatment for dependency behaviours, similar to aversion therapy, which uses imagined rather than real scenarios to replace favourable associations with unfavourable associations

Critical period (imprinting) – a time period in which imprinting must form, after which time it will not be possible for such attachments to form

Critical period (attachment) – a specific time period within which an attachment must form, after which time it will not be possible for such bonding to occur

Cross-cultural studies – comparison of findings from people of different cultures

Cue-dependent forgetting (CDF) – a type of forgetting based upon a failure to retrieve the prompts that trigger recall

Cue reactivity – a learning theory explanation that sees associations being made between environmental prompts and smoking behaviour via classical conditioning

Cultural bias – the tendency to judge and treat people in relation to one's own cultural beliefs and practices

Cultural influences (on food preferences) – eating practices that are transmitted to members of cultural groupings

Cultural relativism – the idea that beliefs, customs and attitudes exist only in relation to the particular culture from which they originate and do not necessarily relate to other cultures

Cultural variations in attachment – differences in child-rearing practices and attachment types between different cultural groupings

Culture bias – the tendency to overdiagnose members of other cultures as having schizophrenia

Cupboard love theory – the belief that attachments are formed with people who feed infants

Custodial sentencing – a prison sentence

Daily hassles – everyday irritations that produce an overall elevated level of stress

Dealing with ethical issues in research – methods by which ethical issues can be prevented and countered

Dealing with offending behaviour – the forms of action used to address and counteract individuals performing criminal offences

Decentring – a movement away from egocentrism where children are increasingly able to see things from the viewpoint of others

Defence mechanisms – strategies used to reduce anxiety, such as repression, denial and displacement

Defence mechanisms (and offending behaviour) – strategies used by the unconscious mind to reduce anxiety that result in criminal actions

Definitions of abnormality – criteria for determining psychological and behavioural states that lead to the impairment of interpersonal functioning and/or distress to others

Dehumanisation – degrading people by lessening of their human qualities

De-individuation – a state in which individuals have lower self-awareness and a weaker sense of personal responsibility for their actions. This may result from the relative anonymity of being part of a crowd

De-individuation (and aggression) – a social psychological explanation that sees aggression arising from individuals losing their sense of identity and moral controls over their behaviour

Delusions – a false belief that is resistant to confrontation with the truth

Demand characteristics – features of a piece of research which allow the participants to work out its aim and/or hypotheses. Participants may then change their behaviour and so frustrate the aim of the research

Denial – a refusal to accept the reality of a situation

Dependent variable (DV) – the factor measured by researchers in an investigation

Depressed attributional style – a cognitive explanation of depression that sees depression as originating from individuals perceiving that negative events occur due to their personal failings

Depression – a mood disorder characterised by feelings of despondency and hopelessness

Deprivation – long-term disruption of an attachment bond

Deprivation model – a situational explanation that sees institutional aggression arising through the loss of prisoners' key needs in a prison setting

Describing addiction – the categorisation of dependency behaviours by their characteristics

Descriptive statistics – the means by which data is summarised to display meaningful patterns

Desensitisation – habituating to the violence seen in the media so that when it reoccurs at a similar level it has no emotional effect

Determinism – the belief that thoughts and behaviour are the result of forces beyond conscious control

Deterrence – a method of stopping someone doing something (in this context, it is used regarding crime prevention)

The development of social cognition – the process by which children develop an understanding of their social world

Deviation from ideal mental health – a definition that sees abnormality as a failure to meet the criteria for perfect psychological well-being

Deviation from social norms – a definition that sees abnormality as behaviour which violates accepted social rules

Diagnosis – identification of the nature and cause of illness

Diathesis-stress model – the idea that individuals have varying genetic potentials for schizophrenia that combine with the degree of environmental stressors in their lives to form their actual amount of vulnerability to the disorder

Differential association theory – a psychological explanation, proposed by Sutherland, that sees offenders acquiring their criminal tendencies by learning from the motivations, attitudes and behaviour from those around them

Discovery learning – learning that occurs through active exploration

Discussion – a division of a write-up of a psychological report that analyses and evaluates the findings of a study

Disequilibrium – unpleasant state of imbalance that motivates a return to equilibrium

Disinhibition (aggression) – the impression of being caught up in media forms of aggression and thus behaving in a non-typical hostile manner

Disinhibition (eating behaviour) – overeating through the loss of restraint over food intake

Disorganised type of offender – a socially inadequate, unintelligent type of law-breaker, who carries out unplanned crimes and tends to leave clues at crime scenes

Displacement (defence mechanism) – a strong emotion is displaced from its target onto a neutral object or person

Displacement (forgetting) – an explanation of forgetting that sees the limited capacity of the short-term memory store resulting in new information replacing old information

Dispositional model – an explanation that sees institutional aggression occurring due to the characteristics of individuals within a prison setting

Dissolution – the process by which romantic relationships break down

Distortions – errors in thinking that negatively affect perceptions of body image

Distributions – the different patterns in which quantitative data occur according to their values and frequency of occurrence
Divisions of the nervous system – the interconnected sub-divisions that comprise the nervous system
Dopamine hypothesis – that the development of schizophrenia is related to abnormal levels of the hormone and neurotransmitter dopamine
Drug therapies for depression – treatment of depression through the use of chemical medications
Drug therapies for OCD – the treatment of OCD through chemical means
Drug therapies for phobias – treatment of phobias through the use of chemical medications
Drug therapy – chemical treatment of abnormality through tablets and intravenous means
Drug therapy (addiction) – the treatment of addiction by chemical means
Drug therapy (stress) – the treatment of stress by chemical means
DSM-5 – diagnostic classification system produced in the USA
Dual control theory – a homeostatic view of eating, whereby hunger motivates eating, which in turn leads to satiety and cessation of eating
Duck's phase model of dissolution – that relationship breakdown occurs through a series of stages (also known as Duck's phase model of relationship breakdown)
Duration – the length of time information remains within storage
Dyadic phase – second stage of dissolution where relationship dissatisfaction is discussed between partners
Dysfunctional thought processing – the idea that the development of schizophrenia is related to abnormal ways of thinking
Eating behaviour – the food choices, motivations and dietary habits of individuals
Ecological validity – a type of external validity concerning the extent to which the findings of studies can be generalised to real-life settings
Effects of computer games – the influence of playing computer games upon aggressive behaviour
Ego – the rational, realistic component of personality that seeks to balance the unrealistic and opposite demands of the id and superego
Egocentrism – an inability to see a situation from another's point of view
Electra complex – the arousal in girls of unconscious sexual desire for their father and dislike of their mother
Electroencephalogram (EEG) – a method of measuring brain activity using electrodes on the scalp
Ellis' ABC model – an explanation that sees depression as occurring through three components of an activating agent, a belief and a consequence
Emotional support – where others demonstrate sympathy and an understanding of an individual's stressful situation
Empirical method – the scientific means by which objective, quantifiable observations are performed in a controlled, replicable setting in order to test or refine a theory
Empiricism – representative of the nurture viewpoint, where behaviour and mental capacities are seen as acquired by learning rather than being innate
Endocrine system – a bodily messaging system consisting of glands that secrete hormones to regulate bodily functioning
Endogenous pacemakers – internal biological mechanisms that assist in the regulation of biological rhythms
Enhanced cognitive interview (ECI) – an advanced method of questioning witnesses that overcomes problems caused by inappropriate sequencing of questions
Enmeshment – a family interactive style that inhibits each family member's sense of individuality
Environment – external learning experiences
Environmental determinism – the viewpoint that behaviour originates from external learning experiences alone
Environmental (stimulus–response) reductionism – the comprehension of behaviour in terms of learned stimulus–response associations
Episodic buffer – component of the WMM that serves as a temporary store of integrated information from the central executive, phonological loop, visuo-spatial sketchpad and LTM
Episodic memory (EM) – a form of LTM for events occurring in an individual's life
Equilibration – the process of swinging between equilibrium and disequilibrium
Equilibrium – a pleasant state of balance
Equity theory – an explanation of relationship maintenance based on motivation to achieve fairness and balance
Esteem support – where others demonstrate that an individual under stress is valued and held in high-regard
Ethical considerations – moral aspects of research that need to be taken into account before studies are conducted
Ethical implications – the consequences of conducting psychological research in unethical ways for participants and wider society
Ethical issues – the rules governing the conduct of researchers in investigations
Ethnocentrism – the assumption that one ethnic group is superior to another or all others and that the behaviour in that group is the 'norm'
Ethological explanation – an understanding of aggression that is gained from the study of animals in their natural settings
Ethology – the study of animal behaviour
Event-related potentials (ERPs) – a method of measuring brain activity in response to a stimulus (using the same equipment as EEG)
Event sampling – an observational sampling method where the number of times a target behaviour occurs is recorded
Evolution – a biological process where genes that increase survival chances become more widespread in a population through a process of natural selection
Evolutionary explanation (of food preferences) – that certain foods are preferable as they have an adaptive survival value
Evolutionary explanation (of obesity) – that obesity results from the evolutionary tendency to store energy as fat for times of food scarcity
Evolutionary explanation of OCD – a biological theory that sees OCD as occurring through a process of natural selection due to the disorder's adaptive survival value
Evolutionary explanation of phobias – a biological theory that sees phobias as occurring through a process of natural selection due to their adaptive survival value
Evolutionary explanations for partner preferences – the viewpoint that relationship choices are based upon features acted upon by natural selection to promote survival chances and thus advance one's genes into the next generation
Evolutionary explanations (of aggression) – a biological theory that sees genes for aggressive behaviours as acted upon by natural selection to become more widespread in a population due to their adaptive survival value

Excitation – the process by which the potential for post-synaptic nerve impulses to be transmitted is increased
Exogenous zeitgebers – external environmental cues that affect the regulation of biological rhythms
Experimental method – a research method using random allocation of participants and the manipulation of variables to determine cause and effect
Explanations for gambling addiction – reasons attributable for gambling dependency
Explanations for nicotine addiction – reasons attributable for nicotine dependency
Explanations for the success and failure of dieting – biological and psychological reasons attributable to the accomplishment and non-accomplishment of losing weight
External validity – the extent to which conclusions can be generalised beyond the setting of a study
Extraneous variables – variables other than the IV that might affect the DV
Extrapolation – the belief that generalisation of findings from animal to human populations is possible due to their common physiologies
Eyewitness testimony (EWT) – evidence provided by those recalling an event who were present when the event took place
Eysenck's theory of the criminal personality – a psychological explanation that sees criminal behaviour as originating from specific personality characteristics
Face validity – a means of assessing validity which involves 'eyeballing' the extent to which something measures what it claims to
Factors affecting attraction in romantic relationships – influences upon the desirability of potential intimate partners
Factors affecting the choice of statistical test – the various criteria by which statistical tests are selected for analysis of quantitative data
Failure to function adequately – a definition that sees abnormality as an inability to cope with day-to-day living
Falsification – that scientific statements are capable of being proven wrong
Family dysfunction – the idea that dysfunctional family relationships and patterns of communication are related to the development of schizophrenia
Family influences – the role that family members play in the learning of dependency behaviours
Family systems theory – that anorexia nervosa results from dysfunctional patterns of family interaction
Family therapy – treatment of schizophrenia by alteration of communication systems within families
Features of science – the elements and characteristics comprising the scientific process
Field experiment – experiment conducted in a naturalistic environment where the researchers manipulate the independent variable
Fight-or-flight response – an innate, unconscious bodily response characterised by increased physiological reaction, which heightens survival chances in response to perceived harmful stressors
Filter theory – that choice of partners is affected by factors limiting the availability of those possible to select from
Findings/results – a division of a write-up of a psychological report that presents the findings of a study
Fixation – an obsessive point of focus that originates from an unresolved trauma occurring during psychosexual stages of development
Fixed action patterns – aggressive behavioural responses prompted by innate releasing mechanisms
Flexibility – the extent to which a minority group being prepared to slightly alter their opinion affects individuals' level of agreement with that opinion
Flooding – a behavioural therapy used to remove phobias through direct confrontation of a feared object or situation
Food preferences – bias towards the consumption of certain foodstuffs
Forensic psychology – an interaction of psychology and law that seeks to apply psychological theory to criminal investigation
Forgetting – the failure to retrieve memories
Free will – the belief that individuals can exert conscious control over their thoughts and actions
Freud's psychoanalytic theory of gender – an explanation of gender development that sees gender identity and role as acquired during the phallic stage where the focus of libido moves to the genitals
Frustration-aggression hypothesis – a social psychological explanation that sees aggression arising from emotional reactions to being unable to achieve goals
Functional recovery – the ability of the brain to transfer functions from a damaged area of the brain to other undamaged areas
Functional resonance imaging (fMRI) – a brain scanning technique using a magnetic field and radio signals to monitor blood flow in the brain in order to produce a dynamic (moving) image of brain activity
Gender – the social and psychological characteristics assigned to males and females
Gender and culture in psychology – how issues relating to the sexes and different populations of people affect the study and understanding of psychology
Gender bias – the differential treatment and presentation of males and females in psychological research and theory
Gender bias (in diagnosis) – the tendency for diagnostic criteria to be applied differently to males and females and for there to be differences in the classification of the disorder
Gender constancy – third stage of Kohlberg's theory that focuses on children's recognition that gender is permanent and unchanging
Gender differences in coping with stress – the varying means by which males and females deal with stress
Gender dysphoria – a condition whereby the external sexual characteristics of the body are perceived as opposite to the psychological experience of oneself as male or female
Gender identity – first stage of Kohlberg's theory that focuses on children's recognition of being male or female
Gender schema theory – an explanation of gender development that sees gender identity alone as providing children with motivation to assume sex-typed behaviour patterns
Gender stability – second stage of Kohlberg's theory that focuses on children's recognition that gender remains constant, but with focus on superficial physical indicators of gender
General adaptation syndrome – a description of the body's short- and long-term reaction to stress
Generalisation – the extent to which findings generated from a sample are representative of a target population
Genes – specific sequences of nucleotides in DNA or RNA transmitted by inheritance from one generation to another
Genetic basis of behaviour – the idea that genes inherited from one's ancestors form the basis of an individual's characteristics and behaviour

Genetic explanation – transmission of abnormality by hereditary means
Genetic explanation (for anorexia nervosa) – that anorexia nervosa results from an inherited predisposition
Genetic explanation (for obesity) – that obesity results from an inherited predisposition
Genetic explanation of OCD – the perception of OCD as transmitted through inherited factors
Genetic explanation of offending behaviour – a biological theory that sees genes inherited from one's ancestors as forming the basis to an individual's criminal behaviour
Genetic factors (aggression) – the influence of inheritance upon aggressive behaviour
Genetic vulnerability – the idea that someone may be more likely to be an addict because of their genetic make-up
Genotype – the inherited behavioural potential of an individual; their genetic make-up
Geographical profiling – a form of bottom-up profiling that analyses the locations of a connected series of crimes in order to determine a probable area of where an offender lives
Ghrelin – a hormone produced by the stomach associated with increasing appetite
Glands – ductless organs that secrete hormones into the bloodstream
Graphs – easily understandable, pictorial representations of data
Grave-dressing phase – fourth stage of dissolution where post-relationship view of break-up is established
Group size – the extent to which the number of people in a group affects the degree to which an individual conforms
Hallucinations – the perception of something being real that does not truly exist
Hard determinism – the viewpoint that humans have no free will, with behaviour shaped by forces beyond personal control
Hardiness – healthy personality type characterised by control, commitment and self-improvement
Hassles and Uplifts Scale – a self-report scale that measures minor everyday irritations and positive experiences
Hemispheric lateralisation – concerns the tendency for neural functions and cognitive functions to be specialised to one side of the brain or other
Heredity – the term for something being inherited, i.e. within the genes
Hierarchy of needs – a series of steps individuals need to progress through in order to self-actualise
Histograms – a type of graph for presenting continuous quantitative data
Holism – a viewpoint that sees behaviour as best understood as a whole rather than being the sum of its constituent parts
Hormonal mechanisms – chemical messengers within the body that influence eating behaviour
Hormones – chemical messengers transmitted in blood and other bodily fluids that inform the organs and tissues of the body how to function
Hostile attribution bias – a form of cognitive distortion, linked to aggressive crimes, where offenders misinterpret the actions of others as intimidating and thus worthy of an aggressive response
The humanistic approach – an explanation of mind and behaviour, which perceives all individuals as unique and motivated to fulfil their potential and maximise their well-being
Human reproductive behaviour – the different mating strategies used by males and females
Hypothalamic-pituitary-adrenal system – bodily system responding to chronic, long-term stressors, comprised of the hypothalamus, the pituitary gland and the adrenal glands
Hypothalamus – a part of the brain which is located in the centre of the brain and deals with basic survival functions
Hypothalamus (role in eating behaviour) – a small brain structure associated with the regulation of eating
Hypotheses – precise testable research predictions
Hypothesis testing – the assessment of testable predictions under scientifically controlled conditions
ICD-10 – diagnostic classification system produced by the World Health Organization
Id – the selfish, irrational, pleasure-seeking component of personality
Ideal self – the self you wish to be
Identification (conformity) – public and private acceptance of majority influence in order to gain group acceptance
Identification (gender) – the process of acquiring the characteristics of the same-sex parent
Identification (social learning approach) – the increased likelihood of behaviour being imitated when it is performed by someone similar to an individual observing the behaviour
Idiographic – when an explanation considers the individual and argues that generalising from person to person is difficult because of their uniqueness
Idiographic approach – a means of understanding mind and behaviour through focus upon the individual, with emphasis on the unique personal experience of human nature
Imitation – the simulation of a model's observed behaviour in order to gain a vicarious reinforcement
Immune system – bodily system that defends against disease
Immunosuppression – the impaired ability of the immune system to fight illness and disease
The implications of psychological research for the economy – the potential financial consequences and impact of conducting psychological studies
Importation model – a dispositional explanation that sees prisoners as bringing their usual high levels of aggression into a prison setting
Imposed etic – using techniques that are only relevant to one culture to study and/or draw conclusions about another
Imprinting – a form of attachment where offspring follow the first large moving object
Improving reliability – the ways by which levels of reliability can be increased
Improving the accuracy of eyewitness testimony – the means by which the retrieval of events experienced can be improved
Improving validity – the ways by which levels of validity can be increased
Independent groups design – experimental design in which each participant performs one condition of an experiment
Independent (unrelated) t-test – a test of difference used for interval data when an independent groups design has been used
Independent variable (IV) – the factor manipulated by researchers in an investigation
Individual differences in stress – the perceptions and reactions of individuals to stress according to their personality types
Individual variables – personal characteristics that affect the degree to which individuals yield to group pressures
Individual variables (dispositional explanation) – an internal explanation that sees personal characteristics as affecting the degree to which individuals yield to authority figures

Inferential testing – statistical procedures that make predictions about populations from mathematical analysis of data taken from samples
Influence of culture – the effect of society upon gender development
Influence of media – the effect of mass communication upon gender development
Influence of parents – the role that mothers and fathers play in forming and maintaining gender roles
Influence of peers – the role that other children play in forming and maintaining gender roles
Information processing model – an explanation of cognition that sees the mind operating like a computer to input and process sensory information in order to facilitate a behavioural output (response)
Informational social influence (ISI) – a motivational force to look to others for guidance in order to be correct
Infradian rhythms – biological rhythms that occur less than once a day
Inhibition – the process by which the potential for post-synaptic nerve impulses to be transmitted is decreased
Innate releasing mechanisms – an inherited automatic physiological means of prompting aggressive behaviour, which occurs in the presence of specific stimuli
Inner scribe – part of the VSS, stores information about the physical relationships of items
Insecure-avoidant attachment – type of attachment characterised by infants being independent of a caregiver physically and emotionally, with the caregiver not seeking to give comfort during times of distress
Insecure-disorganised attachment – attachment type characterised by infants displaying a mixture of insecure-avoidant and insecure-resistant behaviours
Insecure-resistant attachment – attachment type characterised by infants being clingy and dependent, while simultaneously rejecting interactions with a caregiver, with such caregivers being inconsistent in meeting an infant's needs and providing support during times of distress
Institutional aggression – acts of intimidation and violence performed within prison settings
Institutional care – childcare provided by orphanages and children's homes
Instrumental support – where others provide practical assistance in dealing with stress
Interactional synchrony – the co-ordinated rhythmic exchanges between carer and infant
Interactionist approach – the viewpoint that behaviour results from a combination of nature and nurture
Interactionist approach (schizophrenia) – the idea that schizophrenia results from a combination of psychological, biological and social factors
Interference/Interference theory (IT) – an explanation for forgetting when similar material is confused in recall from the LTM
Internalisation (conformity) – public and private acceptance of majority influence, through adoption of the majority group's belief system
Internalisation (gender) – the incorporation of the same-sex parent into an individual's personality
Internal mental processes – the thought processes occurring in the mind between a stimulus and a response
Internal validity – the extent to which a study measures what it claims to measure
Internal working model – a mental representation of an individual's relationship with their primary caregiver that becomes a template for future childhood and adult relationships
Inter-observer reliability – a means of assessing reliability where the degree to which observers code behaviour in the same way is calculated
Interval/ratio – data characterised by standard units of measurement
Interviews – self-report method where participants answer questions in face-to-face situations
Intra-psychic phase – first stage of dissolution where a partner experiences dissatisfaction with their relationship
Introduction – a division of a write-up of a psychological report that details the reasons for a study being conducted
Introspection – an early psychological approach favoured by Wundt that sought to understand the mind through examination of one's own conscious thought processes
Investigative psychology – a form of bottom-up approach profiling that attempts to describe the behaviour of offenders and develop an understanding of their actions
Investigator effects – a research effect where researcher features influence participants' responses
Ironic deviance – the belief that other people's behaviour occurs because they have been told to do it lowers their informational influence
Irrational beliefs – maladaptive ideas that lead to the development and maintenance of anorexia nervosa
Issues and debates – aspects of psychology, often of a philosophical or conceptual nature, which affect the way in which the subject is undertaken and regarded
Klinefelter's syndrome – a chromosomal condition that affects male physical and cognitive development
Knowledge of the physical world – children's understanding of the properties of objects and their relationships to each other
Kohlberg's theory – an explanation of gender development that perceives children as developing an understanding of gender in stages, with gender-role behaviour apparent only after an understanding emerges that gender is fixed and constant
Laboratory experiment – experiment conducted in a controlled environment allowing the establishment of causality
Language centres – brain areas associated with the production and comprehension of language
Lateral hypothalamus – a part of the hypothalamus associated with hunger and onset of eating
Leading questions – questions that prompt or encourage required responses
Learning approach – a means of understanding behaviour that focuses upon environmental experiences through a combination of behaviourism and the social learning approach
Learning theory – the belief that attachments develop through conditioning processes
Learning theory (and gambling dependency) – a psychological explanation that sees gambling dependency as acquired through environmental experience via classical and operant conditioning, as well as social learning theory
Learning theory (and nicotine dependency) – a psychological explanation that sees nicotine dependency as acquired through a two-stage process of social learning and operant conditioning
Legitimacy of authority – the degree to which individuals are seen as justified in having power over others
Leptin – a hormone produced by fat cells associated with the regulation of energy intake and expenditure
Lesions – damage made to brain tissue in order to see the effects upon eating behaviour

Level of moral reasoning – a cognitive explanation that sees individuals of lower moral development as more likely to commit crimes, as they tend not to consider the effect of their actions upon society
Levels of measurement – the different forms by which data can occur
Levels of parasocial relationships – the varying degrees of involvement with media personalities that individuals develop
Life changes – occasional events incurring major adjustments to lifestyle
Limbic system – central brain area with several functions, including the processing of aggressive responses in reaction to environmental triggers
Localisation of function – specific brain areas from which different behavioural functions are operated
Location – the extent to which external setting affects the degree to which an individual will obey an authority figure
Locus of control (LoC) – the extent to which individuals believe that they can control events in their lives
Long-term memory (LTM) – a permanent store holding limitless amounts of information for long periods
MAOA gene – monoamine oxydase A gene, which affects how neurotransmitters are metabolised that is associated with aggressive responses
Mann-Whitney – a test of difference used for ordinal data when an independent groups design has been used
Matched pairs design – experimental design where participants are in similar pairs, with one of each pair performing each condition
Matching hypothesis – the idea that individuals are attracted to people of similar perceived attractiveness
Maternal deprivation hypothesis (MDH) – an explanation of the consequences of disrupting attachment bonds that sees serious, permanent damage to children's development as inevitable
Maternal deprivation hypothesis (and offending behaviour) – an explanation that sees a failure to form positive attachments to caregivers in early life as leading to later criminal behaviour
Mean – the central value of a set of data calculated by dividing the sum of scores by the number of scores
Measures of central tendency – methods of estimating mid-point scores in sets of data
Measures of dispersion – measurements of the spread of scores within a set of data
Measuring stress – the means by which stressful experiences are quantified
Media (anorexia nervosa) – public forms of communication concerning anorexia nervosa
Media influences – public forms of communication that might affect aggressive behaviour
Median – the central value of a set of data when arranged in numerical order
Mediating processes – the thought processes occurring between observation and imitation of a behaviour that affect the behaviour's chances of being imitated
Memory – the means by which the mind stores and retrieves information and events experienced
Meta-analysis – a process in which a large number of studies, which have involved the same research question and methods of research, are reviewed together and the combined data is tested by statistical techniques to assess the effect size
Metabolisation – the processing of a biochemical by the body
Milgram paradigm – experimental procedure devised by Stanley Milgram for measuring obedience rates
Minimalisation – a form of cognitive distortion where offenders use faulty thought processes to underestimate the seriousness of their criminal actions
Minority influence – a type of social influence that motivates individuals to reject established majority group norms
Mirror neuron system – a network of nerves in the brain that allows individuals to experience the actions of others as if they were their own
Misleading information – information that suggests a desired response
Mnemonics – techniques that promote memory recall
Mode – the most frequently occurring value in a set of data
Modelling – the imitation of behaviour demonstrated by someone influential to an individual observing the behaviour
Modelling (and anorexia nervosa) – where learning of anorexia nervosa occurs vicariously by experience through the observation of others
Modified cognitive interview (MCI) – an amended form of the CI
Monotropic theory – the idea that infants have an inbuilt tendency to make an initial attachment with one attachment figure, usually the mother
Monotropy – an innate tendency to become attached to one particular adult
Morality – decisions and behaviour based upon the perception of proper conduct
Motor centre – brain area associated with control of complex movements, such as walking
Motor neurons – nerve cells that transmit information from the CNS to organs, glands and muscles to help sustain their functions
Multiple attachments – the formation of emotional bonds with many carers
Multi-store model (MSM) – an explanation of memory that sees information flowing through a series of storage systems
Nativism – representative of the nature viewpoint, where behaviour and mental capacities are seen as innate rather than acquired by learning
Natural experiment – experiment where the independent variable varies naturally
Naturalistic observations – surveillance and recording of naturally occurring events
Nature–nurture debate – an assessment of the extent to which behaviour is the result of innate biological factors (nature) or environmental learning experiences (nurture)
Negative correlation – where, as the value of one co-variable increases, the value of another co-variable decreases
Negative reinforcement – where a behaviour is strengthened and thus is likely to recur due to avoidance of negative consequences of that behaviour
Negative skewed distribution – occurs when there is a low extreme score or scores
Negative symptoms – the displaying of behaviours involving disruption of normal emotions and actions
Neophobia – a dislike of new or unfamiliar foodstuffs
Nervous system – the network of neurons and fibres which transmit nerve impulses between parts of the body
Neural and hormonal mechanisms – brain structures and chemical messengers that influence aggressive behaviour
Neural correlates – that the development of schizophrenia is related to structural and functional brain abnormalities, including biochemical ones
Neural explanation of OCD – the perception of OCD as resulting from abnormally functioning brain mechanisms

Neural explanation of offending behaviour – a biological theory that sees abnormally functioning brain physiology and biochemistry as forming the basis to an individual's criminal behaviour

Neural explanations (for anorexia nervosa) – that anorexia nervosa results from abnormally functioning brain mechanisms

Neural explanations (for obesity) – that obesity results from abnormally functioning brain mechanisms

Neural mechanisms – the influence of brain components in regulating eating behaviour

Neurochemistry – the biochemistry of the central nervous system consisting of the transmission of neurotransmitters

Neurons – nerve cells that transfer information throughout the nervous system

Neurotransmitters – chemical messengers transmitted in cerebral fluid that convey information between neurons and from neurons to muscles

Nominal – data characterised by frequency of occurrence

Nomothetic – the idea that people can be regarded as groups and theories/explanations are therefore generalisable

Nomothetic approach – a scientific means of understanding mind and behaviour that seeks to establish universal laws common to all individuals

Non-participant observations – surveillance of events where the observer takes no part in the activity being observed

Normal distribution – data with an even distribution of scores either side of the mean

Normative social influence (NSI) – a motivational force to be liked and accepted by a group

Obedience – complying with the demands

Obesity – the condition of being chronically overweight

Object permanence – an understanding that objects that are not being perceived or acted upon still exist

Objectivity – observations made without bias

OCD – anxiety disorder characterised by persistent, recurrent, unpleasant thoughts and repetitive, ritualistic behaviours

Oedipus complex – the arousal in boys of unconscious sexual desire for their mother and fear and dislike of their father

Oestrogen – a group of steroid hormones which promotes the development and maintenance of female characteristics in the body

Offender profiling – an investigative strategy used by forensic psychologists to identify likely suspects

Operant conditioning – a type of learning that occurs through the reinforcement or punishment of the consequences of an individual's actions

Operant conditioning (and attachment) – the development of an attachment bond to a caregiver through the provision of food becoming associated with the removal of the unpleasant sensation of hunger

Operant conditioning (and gambling dependency) – gambling dependency is seen as occurring through the reinforcement of winning or nearly winning bets and the excitement that gambling behaviour induces

Operant conditioning (and nicotine dependency) – nicotine dependency is seen as being maintained by the reinforcement of smoking behaviour that nicotine induces

Operationalisation of variables – the process of defining variables into measurable factors

Operations – strings of schemas assembled in a logical order

Opportunity sampling – sampling method where those available and willing are selected

Ordinal – data characterised by their rank order

Organised type of offender – an anti-social type of law-breaker whose crimes are premeditated and carefully planned, so that few clues are left at a crime scene

Overt observations – surveillance of events where participants are aware of being observed

Oxytocin – a polypeptide hormone which acts also as a neurotransmitter that controls key aspects of the reproductive system

Paradigm – an accepted set of beliefs concerning a phenomenon

Paradigm shifts – revolutionary changes in scientific assumptions

Parasocial relationships – one-sided relationships occurring with media personalities outside of an individual's real social network

Parasympathetic nervous system – branch of the autonomic nervous system that helps facilitate the decrease of bodily activities

Partial and variable reinforcement – the effects upon gambling behaviour that different schedules of reinforcement incur

Participant observations – surveillance of events where the observer takes part in the activity being observed

Pearson's product moment – a test of correlation used for interval data generated from the same person or event

Peer review – scrutiny by experts of research papers to determine scientific validity

Peers – the role that individuals of equal status (e.g. friends) play in the learning of dependency behaviours

Peripheral nervous system – a part of the nervous system responsible for the workings of the limbs and torso that accompanies the workings of the central nervous system

Personality – the combination of characteristics that forms an individual's distinctive nature

Personality as a factor in the development of addiction – the influence of personality characteristics and types in the forming of dependency behaviours

Personality types – broad characterisations describing categories of people sharing similar characteristics

Perspective-taking – the ability to understand from another's point of view

Phenotype – the characteristics and behaviours exhibited by an individual, which occur due to an interaction between their genes and environment

Phobias – anxiety disorders characterised by extreme irrational fears

Phonological loop (PL) – component of the WMM that deals with auditory information

Physical attractiveness – the degree to which an individual's physical characteristics are considered aesthetically pleasing or beautiful

Physiological measures of stress – the quantification of stressful experiences by biological means, such as levels of stress hormones and blood pressure

The physiology of stress – the biological characteristics of experiencing stress

Piaget's theory of cognitive development – an explanation of the growth of intellect that sees children as constructing a mental model of their world through their interactions with the environment

Pilot studies – small-scale practice investigations

Plasticity – the ability of the brain to replace function lost by physical damage to the brain

Pleistocene era (also known as the Environment of Evolutionary Adaptiveness or EEA) – time era when food preferences are seen as having evolved
Positive correlation – where, as the value of one co-variable increases (or decreases), the value of another co-variable similarly increases (or decreases)
Positive reinforcement – where a behaviour is strengthened and thus is likely to recur due to positive consequences of that behaviour
Positive skewed distribution – occurs when there is a high extreme score or scores
Positive symptoms – the displaying of behaviours involving loss of touch with reality
Post-event discussion – information added to a memory after the event has occurred
Post-mortem examinations – a method of study involving dissection of an individual's brain after their death
Pre-conscious mind – the thoughts that occur just out of conscious awareness
Presentation and display of quantitative data – the means by which numerical scores from a study are shown
Primary acoustic store (PAS) – part of the phonological loop, stores words heard
Primary data – data collected specifically towards a research aim, which has not been published before
Privation – never having formed an attachment bond
Proactive interference – a form of interference that occurs when past memories inhibit an individual's full potential to retain new memories
Probability – the likelihood of events being determined by chance
Procedural memory (PM) – type of LTM for the performance of particular types of action
Procedure/method – a division of a write-up of a psychological report that outlines the design decisions and procedures of a study
Prochaska's six-stage model of behaviour change – an explanation that sees quitting dependency behaviours as occurring via a sequential series of phases
Proximity – the extent to which how aware individuals are of the consequences of their actions affects the degree to which they obey authority figures
Psychic determinism – the viewpoint that behaviour originates from the influence of the unconscious mind
The psychodynamic approach – a means of understanding mind and behaviour that sees unconscious psychological processes and childhood experiences as shaping adult personality and behaviour
Psychodynamic explanation for gender development – theory of gender development based on Freud's psychoanalytic theory
Psychodynamic explanations for offending behaviour – a psychological theory that sees criminal behaviour as formed from early childhood experiences, especially during the formation of the superego, which affect later behaviour
Psychological and physiological dependence – the physiological and non-physiological characteristics of dependency behaviours, such as cravings and urges to use a substance
The psychological effects of custodial sentencing – the impact on mental health and the behaviour of those imprisoned by the criminal justice system
Psychological explanations for anorexia nervosa – theories of anorexia nervosa that see the disorder as resulting from non-physiological processes, such as the family systems theory, the social learning theory and the cognitive theory
Psychological explanations for obesity – theories of obesity that see the disorder as resulting from non-physiological processes, such as restraint theory, disinhibition and the boundary model
Psychological explanations for schizophrenia – theories of schizophrenia that see the disorder as resulting from non-physiological processes, such as family dysfunction and cognitive explanations
Psychological explanations of offending behaviour – theories that perceive criminal activity as based upon non-physiological factors of offenders, such as extraversion, neuroticism and psychoticism
Psychosexual stages – a series of stages all individuals progress through from birth to puberty, which shape adult personality
Psychosurgery – a biological treatment of OCD through irreversible destruction/removal of brain tissue
Punishment – where a behaviour is less likely to recur due to negative consequences of that behaviour
Qualitative data – non-numerical data expressing meanings, feelings and descriptions
Quantitative data – data occurring in numerical form
Quasi experiment – where the researcher is unable to freely manipulate the independent variable or randomly allocate the participants to the different conditions
Questionnaires – self-report method where participants record their own answers to a pre-set list of questions
Random sampling – sampling method where all members of a population have an equal chance of being selected without bias
Range – the difference between the highest and lowest scores in a set of data
Rational emotive behaviour therapy (REBT) – a form of CBT for depression that seeks to replace negative self-statements with more positive ones
Reactance – rebellious anger produced by attempts to restrict freedom of choice
Real self – the self that represents who you really are
Recidivism – reoffending following judicial punishment; committing the same, or another, crime again
Reciprocity – the interaction of similar behaviour patterns between carer and infant
Reducing addiction – the varying ways in which dependency behaviours can be treated
Reductionism – a viewpoint that sees behaviour as best understood by reducing it down to its constituent parts
References – a division of a write-up of a psychological report that lists details of all sources used in a study
Rehabilitation – to change the behaviour of an offender to being a non-offender
Reinforcement (and anorexia nervosa) – the rewarding of a behaviour that strengthens (increases) the chances of anorexia nervosa developing
Relationships – alliances of an intimate and emotional nature between two or more people
Relay neurons – nerve cells that transmit information between different parts of the CNS and connect sensory and motor neurons
Reliability – the extent to which a test or measurement produces consistent results
Reliability (of diagnosis) – consistency of diagnosis
Repeated measures design – experimental design where each participant performs all conditions of an experiment

Repeated (related) t-test – a test of difference used for interval data when a repeated measures or matched pairs design has been used

Replicability – being able to repeat a study to check the validity of the results

Reporting psychological investigations – the conventional and accepted way in which psychological research is written up and published

Repression – the placing of traumatic memories into the unconscious mind in order to reduce the anxiety they can produce

Research methods – the means by which explanations are tested

Research papers – investigation reports written to a conventional format

Resistance to social influence – the ways in which individuals attempt to withstand perceived attempts to threaten freedom of choice

Restraint theory – that obesity results from the placing of unsustainable limits on food intake

Retrieval – the recall of stored memories

Retrieval failure – an explanation for forgetting when material is stored in the LTM but cannot be consciously recalled as a result of a lack of retrieval cues to 'jog the memory'

Retroactive interference – a form of interference that occurs when newly learned information interferes with the recall of previously learned information

Risk factors in the development of addiction – circumstances that increase the chances of vulnerability to dependency behaviours

The role of learning in food preferences – the input of environmental experiences into the development of eating habits

The role of stress in illness – the ways in which the experience of stress can lower health and fitness

Role of the father – the extent to which fathers are able to function as caregivers and attachment figures in the development of infants

Role-taking theory – an explanation that sees perspective-taking developing through adopting the outlook of others in order to understand their feelings, intentions and thoughts

Romanian orphan studies – research conducted on Romanian orphans adopted by British families, which assessed the degree to which the effects of privation and institutional care could be overcome by the provision of enriching and nurturing environments

Rusbult's investment model – relationship satisfaction as dependent upon a consideration of perceived benefits, costs and the quality of possible alternative relationships

Sally-Anne test – a method of assessing an individual's social cognitive ability to attribute false beliefs to others

Sampling – the selection of participants to represent a wider population

Sampling techniques – various methods of selecting samples of participants from target populations

Scaffolding – tuition given by more knowledgeable others

Scanning techniques – the various methods by which images of brain function can be produced

Scattergrams – a type of graph for plotting correlational data

Schedules of reinforcement – the varying patterns of reinforcement that affect behavioural response rates in different ways

Schema – a readiness to interpret sensory information in a pre-set manner

Schemas – ways of understanding the world

Schizophrenia – a mental disorder characterised by withdrawal from reality

Scientific methods – forms of research investigation that use standardised ways of making observations, in order to test predictions through objective, unbiased forms of analysis

The scientific process – a means of acquiring knowledge based on observable, measurable evidence

Secondary data – data originally collected towards another research aim, which has been published before

Sections of a scientific report – the various divisions that comprise the write-up of a psychological study

Secure attachment – type of attachment characterised by infants being confident that a caregiver is available to meet their needs and will act as a safe base and a source of comfort in times of distress

Self-actualisation – a peak state of existence that all individuals are motivated to achieve

Self-concept – the way you see yourself

Self-disclosure – the revealing of personal information about oneself to another

Self-disclosure in virtual relationships – the revealing of intimate information about oneself to another via social media sources

Self-report scales – personal ratings of an individual's stress levels

Self-report techniques – participants giving information about themselves without researcher interference

Selman's levels of perspective-taking – the sequential stages by which children develop the ability to see from others' viewpoints and understand their thoughts and feelings

Semantic memory (SM) – type of LTM for meanings, understandings and other concept-based knowledge

Semiotics – the use of signs and symbols to create meaning

Sensitive period – a best time period within which attachments can form, though they still can form with more difficulty outside this period

Sensitive responsiveness – recognising and responding appropriately to infants' needs

Sensory neurons – nerve cells that transmit sensory information to inform the brain about an individual's internal and external environment

Sensory register (SR) – a short-duration store holding impressions of information received by the senses

Separation – short-term disruption of an attachment bond

Separation anxiety – the degree of distress shown by infants when parted from attachment figures

Separation protest – the level and degree of emotional distress shown by infants when apart from caregivers

Serotonin – a neurotransmitter that regulates feelings of well-being and is associated with control of aggressive responses

Set point theory – that each individual is orientated biologically to a specific body weight

Sex – whether an individual is biologically female or male

Sex-role stereotypes – types of qualities and characteristics seen as appropriate for each sex

Sexual selection – the selection of characteristics increasing reproductive success

Short-term memory (STM) – a temporary store holding small amounts of information for brief periods

Sign test – a non-parametric statistical test used for experiments where data is at least nominal and a repeated measures design has been used

Significance levels – statistical criteria determining if observed differences/relationships are beyond the boundaries of chance

Similarity in attitudes – the degree of likeness between individuals' viewpoints
Similarity of social demographic variables – the limiting influence of socio-cultural factors upon partner choice, such as where you live, social class, race, etc
Situational model – an explanation that sees institutional aggression as occurring due to the environmental conditions within a prison setting
Situational variables – features of an environment that affect the degree to which individuals yield to group pressures
Situational variables explanation – an external explanation that sees features of an environment affecting the degree to which individuals yield to authority figures
Skewed distribution – data that does not have an even distribution of scores either side of the mean
Skin conductance response – a method of measuring electrical conductivity within the skin as an indication of psychological and physiological arousal
Sleep/wake cycle – the daily pattern of wakefulness and sleep experienced by individuals
Social change – the alteration of behaviour patterns and attitudes within a cultural grouping
Social cognition – the understanding of information relating to members of the same species
Social exchange theory – an economic explanation of relationship maintenance based on maximising profits and minimising costs
Social explanations for gender dysphoria – the perception that gender dysphoria is a condition learned via socialisation processes
Social influence – how the actions, thoughts and attitudes of an individual are affected by others
Social influence processes – the means by which society changes beliefs, attitudes and behaviour to create new social norms (expected ways of behaviour and thinking)
Social influences (on food preferences) – the impact of others upon an individual's food preferences
Social learning theory – a type of learning based upon the observation and imitation of models seen to be vicariously reinforced
Social learning theory (and aggression) – a social psychological explanation that sees aggression as learned from observation and imitation of models seen to be vicariously reinforced for their actions
Social learning theory (and anorexia nervosa) – the perception of anorexia nervosa as being learned through observation and imitation
Social learning theory (and gambling dependency) – gambling dependency is seen as arising from observation and imitation of models seen to be vicariously reinforced for gambling
Social learning theory (and gender development) – explanation that sees gender development as occurring through the observation and imitation of models
Social learning theory (and nicotine dependency) – nicotine dependency is seen as arising from observation and imitation of models seen to be vicariously reinforced for smoking
Social phase – third stage of dissolution where dissatisfaction is made known within social networks
Social psychological explanations – theories that attempt to explain aggression behaviour through reference to social contexts
Social Readjustment Rating Scale (SSRS) – a self-report scale that measures the impact of major life-event stressors
Social releasers – innate, infant social behaviours that stimulate adult interaction and caregiving
Social roles – the parts individuals play as members of a social group, which meet the expectations of that situation
Social sensitivity – consequences of research that has ethical implications beyond that of the immediate research setting. For example, Sieber and Stanley identified four aspects in socially sensitive research that have ethical implications: the research question, the methodology, the institutional context and the interpretation and application of the findings.
Social support – the perception of assistance and solidarity available from others
Social support (stress) – the degree of assistance and resources available from others to help cope with stress
Socio-biological explanation – a theory of relationships based on biological determinants
Soft determinism – the viewpoint that humans have a degree of free will, as behaviour is somewhat constrained by biological and environmental influences beyond personal control
Somatic nervous system – division of the PNS that transmits information to and from the senses and from the CNS
Somatosensory centre – brain area associated with perception of touch
Sources of stress – the origins and causes of stress
Spearman's rho – a test of correlation used for ordinal data generated from the same person or event
Speech poverty – a negative symptom of schizophrenia, characterised by brief replies to questions and minimal elaboration
Split-brain research – studies of the brain involving separation of the hemispheres of the brain, after surgery for severe epilepsy that cannot be controlled by drugs, which allowed assessment of the functional roles of each hemisphere
Stages of attachment – the phases infants progress through to develop and maintain attachment bonds
Stages of intellectual development – the distinct sequential phases of cognitive growth
Standard deviation – how far on average individual scores in a set of data are from the mean value of that set of data
Standard police interview (SPI) – the established method of police questioning
State-dependent failure – a form of CDF where recall occurs in a different internal setting to coding
Statistical infrequency – a definition that sees abnormality as consisting of behaviours that are rare
Status – an individual's social position within a hierarchical group
Stimulus discrimination – when a stimulus is not associated with the conditioned response as it is too different from the original stimulus
Stimulus generalisation – when a stimulus becomes generalised to other related stimuli which are also associated with the conditioned response
The Strange Situation – the accepted observational testing method for measuring attachment types
Stranger anxiety – the degree of distress shown by infants when in the presence of unfamiliar persons
Stratified sampling – sampling method where random selection of participants occurs from categories of people representing the sub-groups that comprise a target population
Stress – lack of balance between the perceived demands of a situation and perceived abilities to cope with such demands

Stress as a factor in the development of addiction – the influence of stressors in the forming of dependency behaviours
Stress inoculation therapy – type of cognitive behavioural therapy that cognitively restructures emotional and behavioural responses
Stress management – physiological and psychological methods of reducing the negative effects of stress
Stressors – internal and external sources of stress
The structure of personality – the belief that that there are three components to personality, developed through childhood experiences, which motivate thoughts, emotion and behaviour
Structured interviews – interview method where identical closed questions are read out to participants
Superego – the irrational, moralistic part of personality that acts as one's conscience
Sympathetic nervous system – branch of the autonomic nervous system that helps facilitate the increase of bodily activities
Sympathomedullary pathway – bodily system responding to acute, short-term stressors, comprised of the sympathetic nervous system and the sympathetic adrenal medullary system
Symptom overlap – the perception that symptoms of schizophrenia are also symptoms of other mental disorders
Synaptic transmission – the process by which electrical nerve impulses are transmitted chemically by neurotransmitters across the synapse between one neuron and another
Systematic desensitisation – a behavioural therapy for treating anxiety disorders in which the sufferer learns relaxation techniques and then faces a progressive hierarchy of exposure to the objects and situations that cause anxiety
Systematic processing – analysis based upon critical thinking
Systematic sampling – sampling method where every *nth* person from a population is selected
Tables – a numerical means of presenting quantitative data
Task difficulty – the extent to which how obvious a correct answer seems affects the degree to which an individual conforms
Taste aversion – an innate ability to dislike and avoid certain foodstuffs
Temperament hypothesis – the idea that the nature of infants' attachments is due to innate personality factors
Temporal validity – a type of external validity concerning the extent to which the findings of studies remain true over time
Testosterone – a steroid hormone that stimulates development of male secondary sexual characteristics and is associated with aggressive responses
Test–retest reliability – a means of assessing reliability where the findings from the same test given to the same participants on different occasions are compared
Thematic analysis – a method of qualitative research linked to content analysis, which involves analysing data to identify the patterns within it
Theoretical models – explanations of cognition that see thought processes as occurring in a series of distinct steps between a stimulus and a response
Theories of romantic relationships – explanations for the formation and maintenance of intimate alliances
Theory construction – the means by which hypotheses are generated and tested under scientific conditions in order to formulate explanations of phenomena
Theory of mind – the ability to attribute mental states to oneself and others
Theory of planned behaviour – a cognitive explanation that assesses the chances of quitting dependency behaviours through reference to the beliefs, influences and motivation of individuals attempting to quit
Time sampling – an observational sampling method where all behaviour observed in a specific time frame is recorded
Token economies as used in the management of schizophrenia – a method of behaviour modification used with schizophrenic patients that reinforces target behaviours by awarding tokens that can be exchanged for material goods
Tolerance – the need to take higher levels of a substance to get the same physical and psychological effects
Top-down approach – a method by which forensic psychologists use their knowledge and insight to create a profile of a possible offender from details of a crime scene
Trace decay – an explanation of forgetting that sees physical traces (engrams) of memories fading over time
Turner's syndrome – a chromosomal condition that affects female physical development
Two-process model – the perception of phobias as acquired through classical conditioning and social learning, with their maintenance upheld through operant conditioning
Type I errors – when a difference/relationship in a data set is accepted as a real one but in fact is not
Type I schizophrenia – acute form characterised by positive symptoms and responsive to medication
Type II errors – when a difference/relationship in a data set is rejected, but actually does exist
Type II schizophrenia – chronic type characterised by negative symptoms and unresponsive to medication
Type A personality – personality type characterised by time urgency, excessive competitiveness and generalised hostility, incurring risk of heart disease
Type B personality – healthy personality type characterised by non-competitiveness, self-confidence and relaxation
Type C personality – personality type characterised by suppression of negative emotions, incurring risk of cancer
Type D personality – personality type characterised by distress, gloom, worry and lack of sociability, incurring risk of heart attacks
Types of attachment – the different forms of attachment patterns that can form as a result of caregiver–infant interactions
Typical antipsychotics – the original neuroleptic drugs created in the 1950s to treat schizophrenia
Unanimity – the extent to which members of a group agreeing with one another affects the degree to which an individual conforms
Unconditional positive regard – total acceptance received from another person
Unconscious mind – the thoughts that occur without any conscious awareness
Uniform – the extent to which the clothing worn by an authority figure affects the degree to which an individual will obey their commands
Unipolar depression – a form of depression occurring without mania
Universality – where research is seen as applying equally to everyone
Unstructured interviews – interview method involving an informal discussion on a particular topic
Validity – the extent to which results accurately measure what they are supposed to measure
Validity (of diagnosis) – accuracy of diagnosis

Variables affecting conformity – characteristics that can affect the degree to which individuals conform

Ventromedial hypothalamus – a part of the hypothalamus associated with cessation of eating

Vicarious reinforcement – a reinforcement seen to be gained by a person modelling a behaviour

Violation of expectation technique – a research method that uses the tendency for infants to look for longer at things that are not expected to test their knowledge of the properties of objects

Virtual relationships – non-physical interactions between people communicating via social media

Visual cache (VC) – part of the VSS, stores information about form and colour

Visual centre – brain area associated with the perception of visual information

Visuo-spatial sketchpad (VSS) – component of the WMM that deals with visual information and the physical relationship of items

Volunteer sampling – sampling method where participants select themselves as participants, also known as self-selected sampling

Vygotsky's theory of cognitive development – an explanation of the growth of intellect that sees intellectual growth as a social process where cognitive functions arise from children's interactions with others

Ways of assessing reliability – the means by which reliability can be determined

Ways of studying the brain – methods of research available to psychologists in order to assess the functions of the brain

Wernicke's area – brain area associated with the comprehension of language

Wilcoxon signed-matched ranks – a test of difference used for ordinal data when a repeated measures or matched pairs design has been used

Withdrawal syndrome – the reaction psychologically and physically of an individual when they no longer have a substance in their system

Working memory model (WMM) – an explanation that sees short-term memory as an active store holding several pieces of information simultaneously

Workload – the number of tasks and obligations an individual has to perform or complete within a specific amount of time

Workplace stressors – aspects of the work environment which have a negative impact on health

Zero correlation – where, as the value of one co-variable increases or decreases, there is no similar increase or decrease in another co-variable

Zone of proximal development – the distance between current and potential intellectual ability

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